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DISTRIBUTION AGE

OCTOBER, 1948

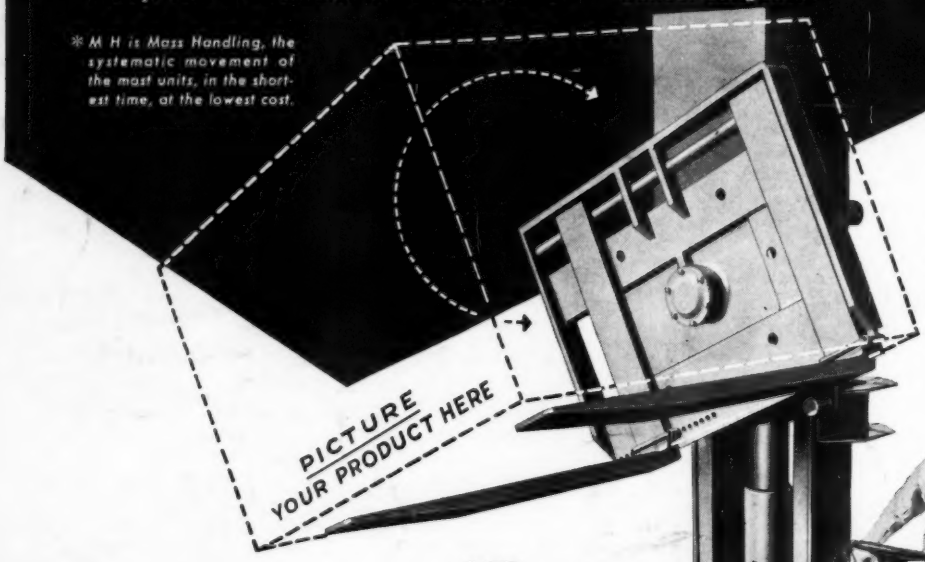
Is Your Plant as Modern as Your Product?

Step Up Productive Output with TOWMOTOR MH*

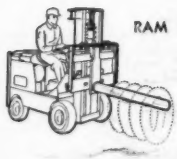
Overcome the handicap of obsolete handling methods—let Towmotor Mass Handling help you increase productive output in your plant. Versatile, gasoline-powered Towmotor Fork Lift Trucks and Towmotor Accessories provide all the benefits of modern handling techniques for every plant, large or small . . . handling raw materials and finished products of every size, shape and type . . . 24 hours a day. Turn to Towmotor for the solution to your handling problem. Follow the lead of the men who have to make handling pay a profit. More *professional handlers* use Towmotor than any other fork lift truck.

If your handling problems cannot be solved with a standard Towmotor unit, our engineers are available to analyze your procedures and design special equipment necessary to meet your specific needs. Details available without obligation.

** M H is Mass Handling, the systematic movement of the mast units, in the shortest time, at the lowest cost.*



Towmotor Fork Lift Truck, Model LT-50, equipped with Towmotor Revolving Carriage Accessory for transfer movement of bulk materials.



SEND FOR FREE BOOK!

Towmotor Fork Lift Truck and Tractor Guide—informative, helpful information about the complete line of Towmotor materials handling equipment. Send for a free copy.

TOWMOTOR CORPORATION

Division 19, 1226 E. 152nd St., Cleveland 10, Ohio

REPRESENTATIVES IN ALL PRINCIPAL CITIES IN U. S. AND CANADA

TOWMOTOR FORK LIFT TRUCKS *and* TRACTORS

THE ONE MAN BAND

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

DOW CHEMICAL saves thousands of dollars annually with *BAKER TRUCKS*

Baker Fork Truck with Trayner-Reinhart cylinder carrier easily transports twelve 16" cylinders.

At the Pittsburg, California, plant of The Dow Chemical Company, five Baker Fork Trucks expedite handling of material in production, storage and shipping departments.

Two of these trucks, one of them fitted with a Trayner-Reinhart cylinder carrier, transport 16" cylinders of ammonia—twelve at a time—from production to warehouse and from warehouse to shipment. Trucks load cylinders directly into boxcars, or onto highway trucks.

The remaining trucks speed handling of chemical products in bags or cartons on pallets—taking them from production to storage, where they are high-tiered to conserve floor space, and from storage to shipment, where further man-hour savings are made in loading.

Prior to the installation of the Baker Trucks, material was transported manually and hand-stacked. Cylinders were rolled by hand, one at a time. The use of the trucks has resulted in savings of thousands of dollars annually over former methods.

BAKER INDUSTRIAL TRUCK DIVISION
of The Baker-Raulang Company
2176 West 25th Street • Cleveland 13, Ohio
In Canada: Railway and Power Engineering Corp., Ltd.

Bagged material, stacked on pallets as it comes from the line, is tiered to the ceiling in storage. Cartons of finished chemical products are handled in pallet loads to save manual handling in transporting, storing, and car or truck loading.

See us at the 3rd National Materials Handling Exposition, Philadelphia, January 10-14, 1949

Baker INDUSTRIAL TRUCKS

you get more work out of Mack Trucks

"Mack Mono-Shift performance is sensational . . . gives us quicker shifting . . . higher average speed." So writes Kessell Transfer & Storage Co., Des Moines, Ia. Like numerous other long-distance haulers, this company has found that when it comes to working harder and lasting longer at lowest cost, there's nothing on the road to beat a Mack.

because..we put more work into Macks

There is no guesswork about the stamina of Mack parts. This testing machine determines the strength and elasticity of Mack axle shafts by imposing measured torque up to point of fracture. Sample shafts are tested to destruction, thus insuring that all Mack shafts fully measure up to Mack's exacting standards.

Mack

trucks for every purpose

Mack Trucks, Inc., Empire State Building, New York 1, New York. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts. In Canada, Mack Trucks of Canada, Ltd.

82187

SINCE 1900, AMERICA'S HARDEST-WORKING TRUCK

THIS MONTH'S COVER—Giant air carriers of the Berlin Airlift, concentrated at Tempelhof Airfield, are part of a 585-mile-long conveyor which is transporting desperately needed supplies to beleaguered Berliners . . . Read in this issue what Charles L. Saperstein has to say about this truly tremendous achievement made possible through the efficient coordination of various agencies of distribution: handling, warehousing, transportation, finance, and service and maintenance. Air Force photos.

DISTRIBUTION AGE

The Magazine That Integrates All Phases Of Distribution

100 E. 42nd St., New York 17

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Assistant Manager

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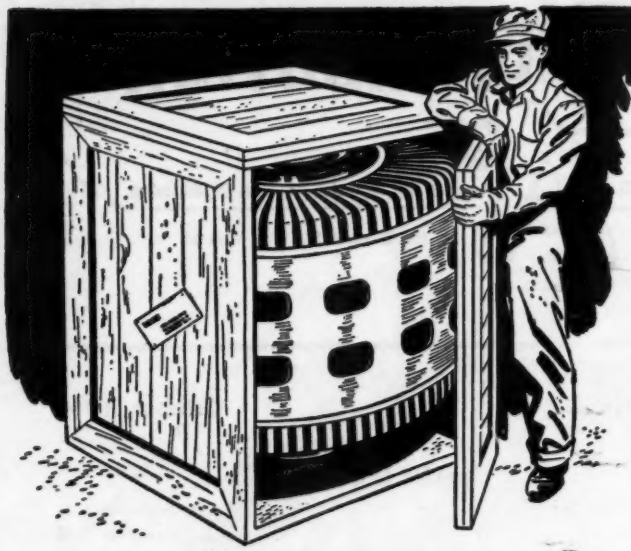
STATEMENT OF POLICY . . . Our policy is based on the premise that distribution embraces all activities incident to the movement of goods in commerce. If distribution is to be made more efficient and economical, we believe business management must consider more than sales, because more than sales are involved. Marketing, while vital, is one phase only of distribution; seven other practical activities not only are necessary but condition marketing costs. Most commodities require handling, packing, transportation, warehousing, financing, insurance, and service and maintenance of one kind or another before, during or after marketing. We regard all of those activities as essential parts of distribution. Hence, the policy of DISTRIBUTION AGE is to give its readers sound ideas and factual information on methods and practices that will help them to improve and simplify their operations and to standardize and reduce their costs in all phases of distribution.

ALONG THE WAY...OF *TWA*



HALF-TON TURBINE TAKES 16,000-MILE HOP

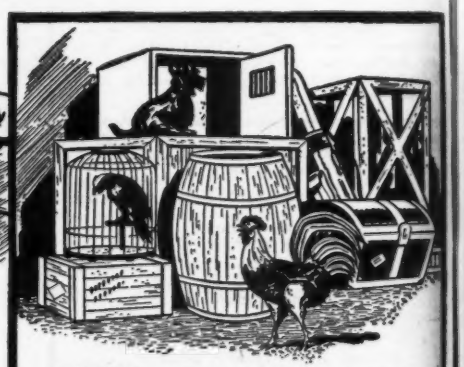
WHEN A 1,000-POUND TURBINE FAILURE CRIPPLED A POWER PLANT SERVING DHAHRAN AND SURROUNDING SAUDI ARABIAN TERRITORY, OFFICIALS PONDERED THE PROBLEM OF REPAIRS IN A HURRY. DESPITE DISTANCE, IT WAS DECIDED TO SHIP THE MACHINE HALF AROUND THE WORLD TO THE PHILADELPHIA MANUFACTURER WHO BUILT IT. A RACE WITH TIME...SO **TWA** WAS CALLED. DETAILS PROMPTLY HANDLED, THE HUGE TURBINE 'FLEW' THE 16,000-MILE ROUND TRIP VIA AIR CARGO...WAS BACK ON THE JOB IN A MATTER OF DAYS.

START THIS WAY TO SHIP **TWA**

REACH FOR YOUR PHONE. THERE'S A **TWA** AIR CARGO OFFICE NEARBY ...READY TO ANSWER QUESTIONS... EXPEDITE YOUR SHIPMENT. LOOK UP THE NUMBER NOW. KEEP IT HANDY.

KEEPER OF THE KEYS

A FLYING CARGO AGENT TRAVELS ABOARD ALL **TWA** INTERNATIONAL CARGO FLIGHTS. HE KEEPS AN EYE ON VALUABLES. AND FOR MAXIMUM PROTECTION...GOLD, SILVER, PLATINUM, GEMS AND JEWELS ARE CARRIED UNDER LOCK AND KEY IN A TON-SIZE 'STRONG BOX' BUILT RIGHT INTO THE FUSELAGE.

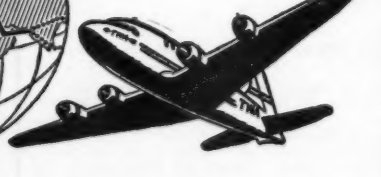


TWA AIR CARGO CAN BE ALMOST ANYTHING

WHETHER YOU HAVE AN EMERGENCY SHIPMENT, PERISHABLE, OR TYPICAL 'RUSH ORDER'...GOODS SENT VIA **TWA** AIR CARGO TRAVEL FAST AND AT LOW COST.

ALL-CARGO . . . AIR-CARGO —A TWA FIRST

Big all-cargo planes first flew TWA routes during the war. For over a year, now, regularly scheduled flights rush TWA Air Cargo direct to destinations east or west



TWA

TRANS WORLD AIRLINE

U.S.A. · EUROPE · AFRICA · ASIA

"HIGH" WAY TO WORLD MARKETS

TWA Air Cargo travels above the clouds...the "high" way to Europe, Africa, Asia. Call TWA today. Frequent flights... low rates. If you are shipping overseas, any international freight forwarder can also give you complete information.

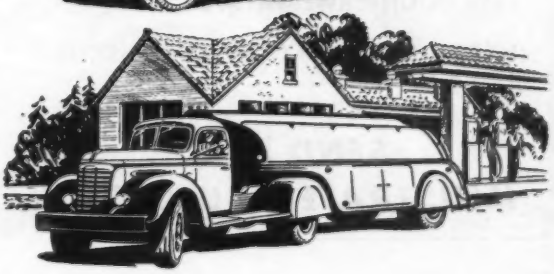
GMC SERIES 720 AND 800

Winning Numbers FOR HEAVY HAULERS

Here's good news for operators hauling heavy loads of milk, petroleum, machinery . . . logs and lumber . . . stone and ore . . . furniture and freight. Substantial production of GMC 720 series Specialized Tractors and 800 series straight truck models, assures quick delivery.

GMC 720 series tractors have gross combination weight ratings of 40,000 pounds . . . the 800 series trucks have gross vehicle weight ratings of 30,000 pounds. Both are offered in wheelbases of 136 to 196 inches, with cab-axle dimensions of 60 to 120 inches. Both have big 426 cu. in. engines of the same basic design as the war famous "Army Workhorse." Both have many other features specific to the jobs for which they are built.

If you need a new truck in either classification, put your money on one of these all-truck, heavy duty GMCs.



GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

THE TRUCK OF VALUE

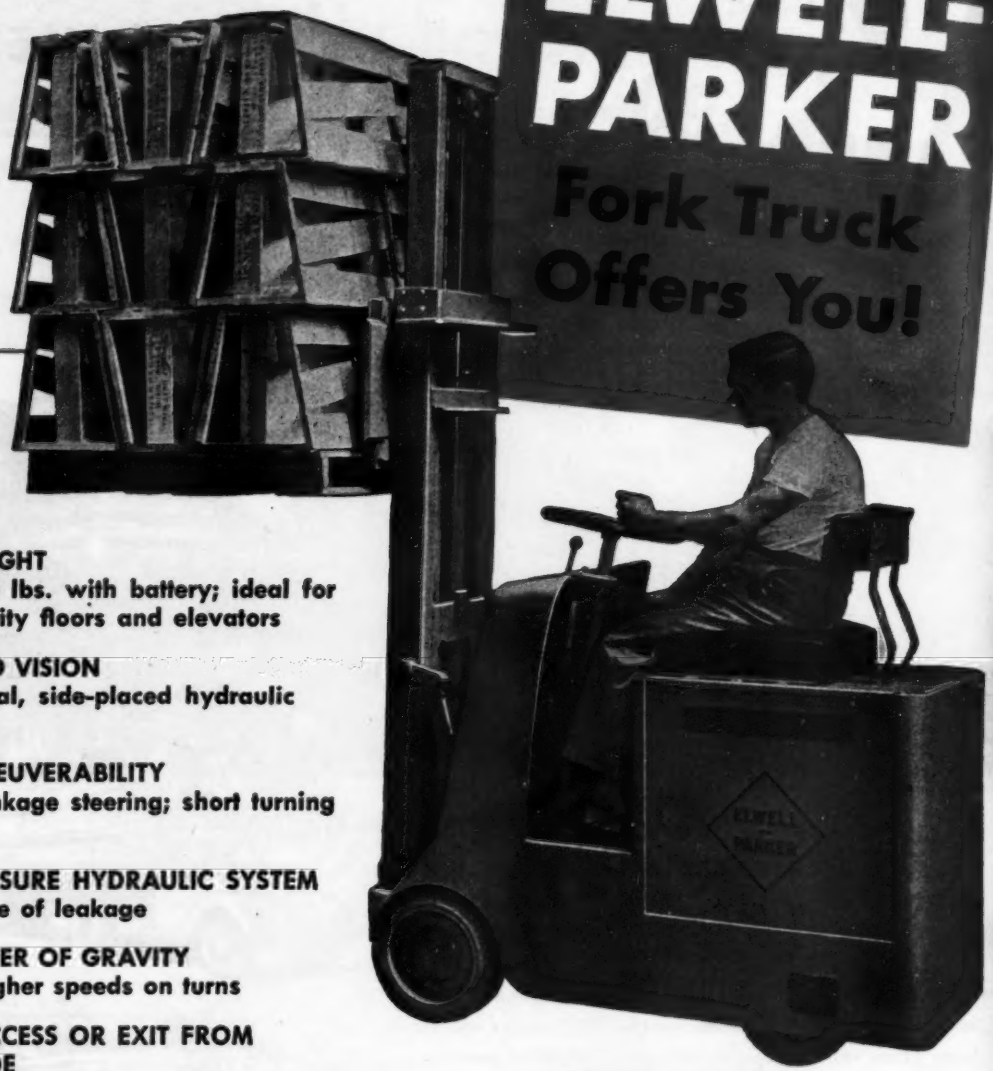
GMC TRUCKS

GASOLINE • DIESEL

Type F-26T
2000 lbs. capacity
24" load center

See what this NEW

ELWELL-PARKER Fork Truck Offers You!



LIGHT WEIGHT
only 4550 lbs. with battery; ideal for low capacity floors and elevators

IMPROVED VISION
due to dual, side-placed hydraulic cylinders

TOP MANEUVERABILITY
straight linkage steering; short turning radius

LOW PRESSURE HYDRAULIC SYSTEM
less chance of leakage

LOW CENTER OF GRAVITY
permits higher speeds on turns

QUICK ACCESS OR EXIT FROM EITHER SIDE

ADAPTABLE FOR SPECIAL LOAD HANDLING DEVICES

AIR FOAM, FORM FITTING SEAT

LESS COUNTERWEIGHTING

HYDRAULIC SAFETY VALVES CONTROL LIFT & LOWERING

SEND FOR ILLUSTRATED BULLETIN

PROMPT DELIVERY

WHY? Elwell-Parker has produced this new low-capacity fork truck in view of ever increasing costs of common labor. Model F-26T is the latest member of the E P E "AIR RIGHTS" Series. The Elwell-Parker Electric Company, 4110 St. Clair Avenue, Cleveland 14, Ohio.

ELWELL-PARKER
POWER INDUSTRIAL TRUCKS
Established 1917

Delta Air Freight

Southern Extension of your Shipping Dock

Direct from your dock, Delta picks up shipments and delivers them overnight in the cities of the South. And all at rates about equal to, and often below, the total cost by first class surface means.

On All Flights

Delta Air Freight is available on all scheduled passenger flights, as well as on special all-cargo "Flying Freighters." Timed just for the convenience of shippers, the "Flying Freighters" operate as a steady shuttle serving Chicago-Cincinnati-Atlanta-Birmingham-New Orleans-Dallas-Fort Worth.

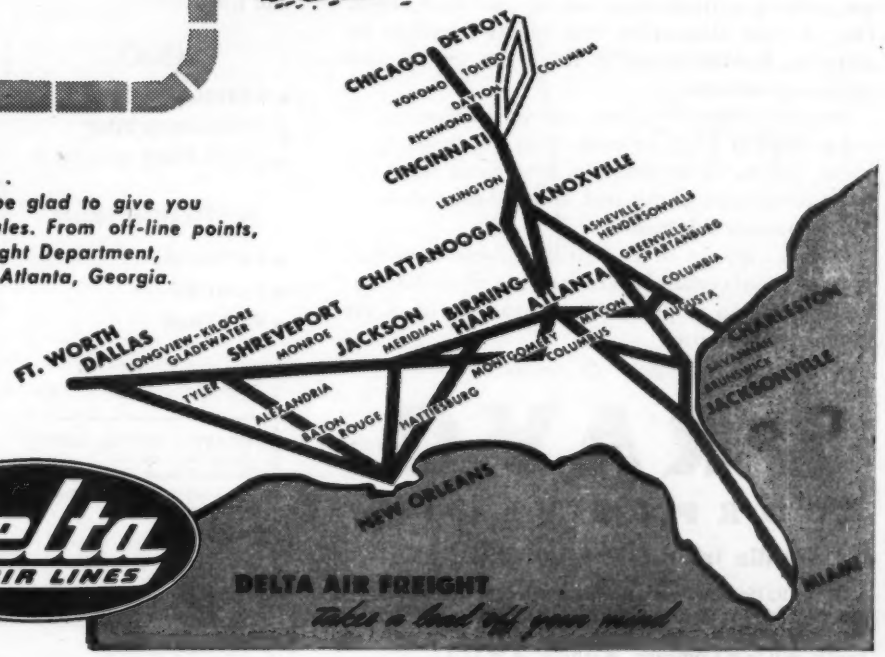
Compare These Rates

Here are a few examples to show the economy of this cargo service. Pick-up and delivery is optional; you don't pay for it unless you use it.

Per 100 Pounds Air Freight from Airport-to-Airport

Chicago-Cincinnati	$3.07
Cincinnati-Atlanta	4.55
Atlanta-Chicago	6.55
Dallas-New Orleans	5.05
Cincinnati-New Orleans	8.00
Detroit-Atlanta	6.55
Detroit-Birmingham	7.55
Fort Worth-Atlanta	8.00
New Orleans-Atlanta	5.05

Fast—Frequent—Direct TO and THRU the South!



Call or Write . . .
Any Delta office will be glad to give you complete rates and schedules. From off-line points, just write: Air Freight Department, Delta Air Lines, Atlanta, Georgia.

Delta AIR LINES

General Offices: Atlanta, Ga.

Are you losing sleep over messages like this? You don't have to!

Goods shipped overseas in Dravo *Transportainers* are arriving at destination *intact—and undamaged.* One shipper eliminated 75% of his breakage by shipping bottled goods in these 275 cu. ft. steel shipping containers.

Another's export packing costs were reduced 67% —a savings of $120 on each container load. On a highly-pilferable commodity, loss from theft has been completely eliminated since inauguration of *Transportainer* shipments.

With a capacity of 12,000 lbs., these vault-like, weatherproof containers are carrying many different kinds of cargo to ports all over the world. Over 700 are now in use.

Your carrier may be able to offer you this modern means of handling export shipments. Consult with him, or, use the coupon for further information and literature.

REDUCE

- **HANDLING COSTS**
- **WATCHING TIME**
- **INSURANCE CHARGES**

PROTECTION FROM

- **PILFERAGE**
- **DAMAGE**
- **WEATHER**

TRANSPORTAINER

DRAVO
CORPORATION

Neville Island, Pittsburgh 25, Pa.

SHIPYARDS: Pittsburgh 25, Pennsylvania, and Wilmington 99, Delaware ● EASTERN SALES OFFICE: 30 Church Street, New York 7, New York ● EXPORT ASSOCIATES: Lynch, Wilde & Company, Washington 9, D. C.

DRAVO CORPORATION, P-7224
Room M-1114-10
Neville Island, Pittsburgh 25, Pa.

We would like to know more about DRAVO Transportainers. Please send literature.

Name .....

Title .....

Company .....

Address .....

City and State .....

UNION PACIFIC

The Governor of Washington *invites You*

State of Washington
EXECUTIVE DEPARTMENT
Olympia

MON C. WALLGREN
GOVERNOR

To American Industry:

Washington is a fast growing state. We are extending our war-time gains and making great strides forward. People are hard at work building more dams, laying out new towns, preparing new land for farms.

The Columbia River is the greatest single source of electrical power in the world. With low-cost power, our wealth of natural resources, and our maritime trade with Alaska and the Orient we are establishing a regional economy unrivalled in the nation.

Enterprising business men will find here new and exciting industrial opportunities. These include processing of raw materials, fabrication of new products, diversified trades to service a growing city and farm population.

Washington State is a good place in which to live, to work, to do business and to prosper.

Governor

Mon C. Wallgren

* One of a series of advertisements based on industrial opportunities in the states served by Union Pacific Railroad.

Unite with Union Pacific in selecting sites and seeking new markets in California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, Oregon, Utah, Washington, Wyoming.

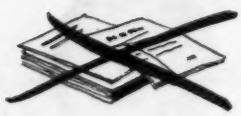
*Address Industrial Department, Union Pacific Railroad
Omaha 2, Nebraska

UNION PACIFIC RAILROAD

Road of the Daily Streamliners

9 Ways to Sell more, Save more

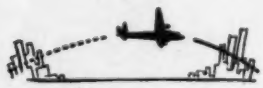
by using United Air Freight



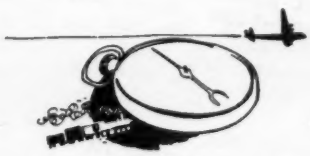
1. REDUCE INVENTORIES. Lessen risk and expense of big stocks. Let United Air Freight move in supplies as you need them.

2. CUT WAREHOUSE COSTS. Eliminate costly distribution points by shipping direct. Your markets are only *hours* away, via United.

3. WIDEN DISTRIBUTION. Perishable products – and others formerly limited to local markets – can now be sold across the nation.



4. IMPROVE SERVICE. Be there first with new products. Offer quick deliveries, through United Air Freight, as a big "service-plus"!



5. SPEED TURNOVER. Get products out of slow-moving, money-losing "pipelines." Use United Air Freight to speed sales and profits.

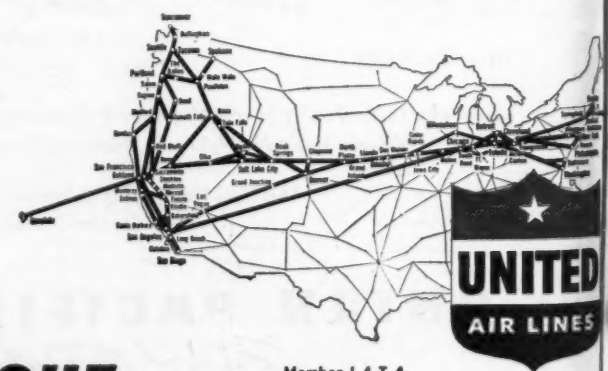
6. INCREASE SALABILITY. Rush fruits, flowers, sea food, and like products to market at the height of freshness on United.

7. HIT DEMAND PEAKS. Certain items sell fast, but only temporarily. Hit demand peaks, using United Air Freight to fill orders rapidly.

8. KEEP PRODUCTION MOVING. Avoid costly interruptions. Specify United Air Freight for shipment of parts and supplies.

9. SAVE ON INTEREST. By keeping goods moving – and out of non-productive storage or slow transit – you have less money tied up.

UNITED AIR LINES, with its unequaled route, interline connections, equipment, and frequency is the ideal cargo route of the nation . . . and a valuable tool of modern business. A United Sales Engineer will be glad to call. He'll tell you about the economical rates. He'll suggest profit-making ways to fit United Air Freight into your distribution system. Call your local United office. Or write United Air Lines, Cargo Sales Division, 5959 S. Cicero Ave., Chicago 38, Ill.



UNITED AIR FREIGHT

Member I.A.T.A.

In Mexico, LAMSA Airlines

Bassick Casters

THE COMPLETE LINE

From tea tables to ten-ton trucks — there are sizes and types of Bassick casters for anything you move.

casters illustrated are representative types

Bassick

MAKING MORE KINDS OF CASTERS . . . MAKING CASTERS DO MORE

Series "93"

SUPER HEAVY DUTY

8" and 10" sizes will carry any load the floor will stand. Made with such precision they are really "machine tools of motion".

Series "61"

ECONOMICAL STEEL

Sizes from 2" to 6". Inexpensive, single ball race, rugged steel casters. Sheet Heavy Kingpin gives extra strength and life.

Series "77"

MEDIUM DUTY

3"-4"-5"-6" and 8" sizes with the famous Bassick "Full-Floating" two-level ball race construction. BHT-80M material—80,000 lbs. tensile strength per sq. in. Rugged, easy swiveling, all-purpose casters.

Series "70"

LIGHT DUTY STEEL

1½"-2"-3"-4"-5" sizes. "Diamond-Arrow" light duty, two-level ball race casters for light equipment.

Series "99"

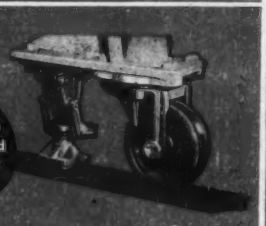
SILENT STEEL

3"-4"-5"-6" and 8" sizes with double ball race, projection welded casters. Fast, quiet, easy-swiveling, general-duty, top-quality casters.

Series "69"

FOR OFFICE CHAIRS

With 1½" and 2" wheels. "Diamond-Arrow"—the largest-selling quality office chair casters. For wood and metal chairs.



GROOVED WHEEL and POSITION LOCK

Grooved wheel casters on angle iron floor track make efficient assembly lines for economical production. Position lock holds equipment stationary at work locations . . . sets and releases at touch of toe.

"Floating Hub"

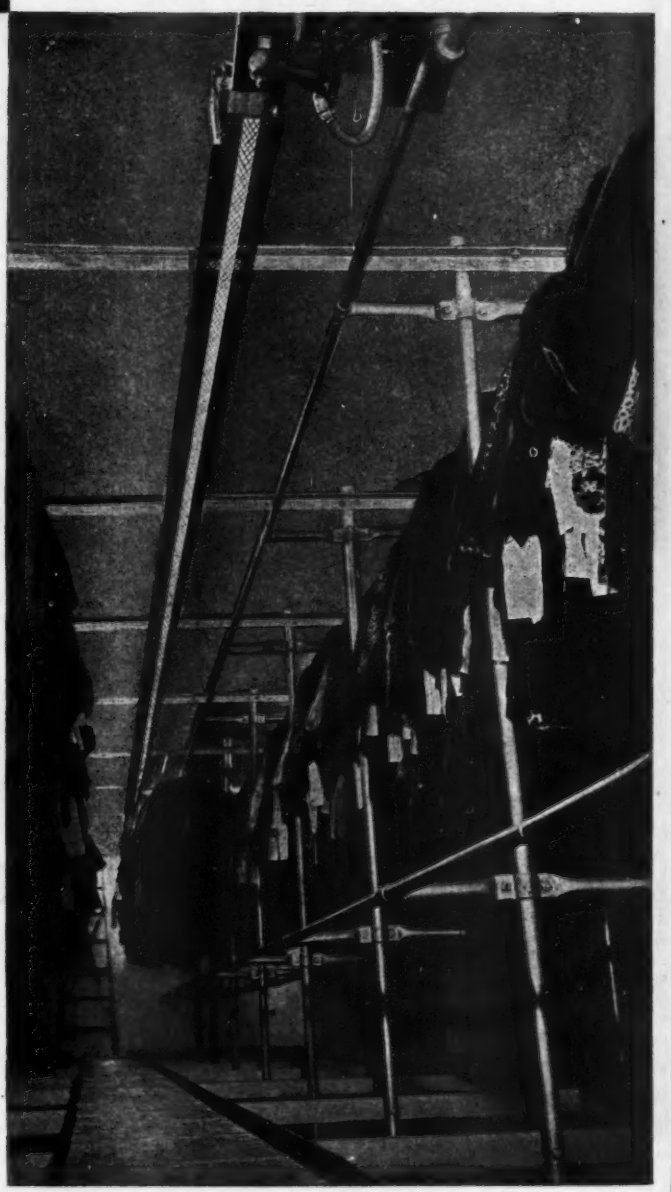
LIGHT TO HEAVY LOADS

Carries liquids, fragile materials, delicate instruments, highly polished parts with maximum safety. Unique spring suspension absorbs jars and shocks, makes moving easier.

Bassick casters are sold by leading industrial distributors. For catalogs or help with special applications, write to the world's largest manufacturer of casters: THE BASSICK COMPANY, Bridgeport 2, Connecticut. Division of Stewart-Warner Corporation. *Canadian Division:* Stewart-Warner-Alemite Corporation, Ltd., Belleville, Ontario.

SOLVES THE PROBLEM OF FIRE SAFETY IN FUR STORAGE VAULTS...

ADT *Automatic Smoke Detection and Alarm Service*



No longer need there be danger of heavy damage from smoke or fire in fur storage vaults and similar high value enclosures.

ADT Automatic Smoke Detection and Alarm Service now provides a high degree of fire safety for such establishments by means of devices which detect the presence of smoke, automatically give an alarm and automatically close dampers and shut down fans.

Especially engineered and designed for protective purposes, these devices operate instantly whenever smoke intercepts a beam of light. Incipient fires are thus detected and reported, *often before there is any sign of heat or fire.*

Air ducts of air conditioning or other air circulating systems may be similarly protected through application of the same type of devices to provide ADT Automatic Fire and Smoke Control Service.

Continually dependable operation is assured by constant supervision, regular inspections and complete maintenance, provided through ADT Central Stations in principal cities of the United States.

Write for further information on this and other ADT Protection Services.

ADT

Controlled Companies of

AMERICAN DISTRICT TELEGRAPH CO.

155 SIXTH AVENUE NEW YORK 13, N. Y.

Central Station Offices in all Principal Cities of the United States

"I Found a Way to Save $6,222.50 in a dusty old desk drawer"

● "I happened to be rummaging through an old desk about to be discarded for a newer model. In one of the drawers, gathering dust, I came upon a booklet labeled 'ATCO Material Handling Survey'.

"Upon closer inspection, I found it to be a complete and thorough study showing how we could save $6,222.50 in just one phase of our radio cabinet unloading operation. It seemed fantastic . . . perhaps that's the reason it remained unacted upon. But $6,222.50 is a lot of money to save. So I called in the ATCO Material Handling Specialist who made the survey.

"His time studies and cost figures told a truly amazing story of human energy saved, handling costs slashed unbelievably in the unloading of hundreds and hundreds of carloads of our difficult-to-handle radio cabinets.

"On the basis of his survey, we ordered 2 Automatic Skylift Electric Trucks, and 3 Transporter Motorized Hand Trucks. Skylift not only moved huge loads of radio cabinets from low-doorway freight cars, but also stacked them ceiling-high in storage. Then Transporter midgets of electric power moved the cabinets to production and the finished radios from the end of production line to shipping.

"Where formerly it took 25 man-hours to unload 1 carload of radio cabinets at a labor cost of $32.75 per car, it now takes only . . . 6 man-hours to unload the same car . . . a saving of 19 man-hours or $24.89 labor cost saved per car.

"Multiply this by the hundreds of carloads on our unloading schedule, and it adds up to a $6,222.50 SAVED . . . a return of 75% on our investment . . . and on just one phase of our radio manufacture operation.

"An ATCO Specialist may be able to do for *your business* what he did for *mine*. At least let him make a survey. It costs you nothing. Mail the coupon."

Skylift
ELECTRIC TRUCKS
A PRODUCT OF AUTOMATIC
Lighten LIFE'S LOADS

AUTOMATIC TRANSPORTATION COMPANY
DIV. OF THE YALE & TOWNE MFG. CO.
115 West 87th Street, Dept. T-8, Chicago 20, Ill.
Please mail me, without cost or obligation, complete facts about AUTOMATIC SKYLIFTS and TRANSPORTERS, the miracle electric trucks and how they can cut my handling costs.

( ) Have an ATCO Material Handling Specialist make a FREE survey of our handling costs.

Company Name.....

By.....Position.....

Street Address.....

City.....State.....

EVER THINK OF THIS AS A *Production Department?*

YOU may not consider your Traffic Department as a part of the ***production*** end of your business—but it is!

The degree of efficiency with which materials flow into and out of your plant has a tremendous effect on total costs — and that's where your Traffic Manager comes in.

He'll tell you, for example, that hundreds of manufacturers are ***designing motor transport right into their new plants*** — tying it into their production set-ups to eliminate storage and the multiple handling of materials, thus speeding inventory turnover.

Or perhaps, in your case, he'll show you how you can cut costs by merely providing adequate loading and unloading facilities for motor transport.

He knows that motor transport offers a flexibility of service unmatched by any other method — a service which can fit into most businesses to cost-cutting advantage.

You'll want to discuss your present set-up with him—but, even more important, ***make sure you get his thinking on the part motor transport can play in your expansion planning for the future.***

YOUR PLANNING COMMITTEE SHOULD INCLUDE:

. . . your Traffic Manager . . . your Architect . . . your Contractor and your Motor Transport Operator. Working together, they can materially aid in your plans to provide a "built-in" efficient transportation set-up.

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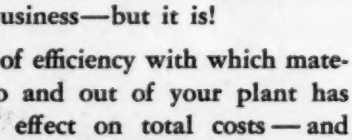

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YOU CAN PULL FAR MORE THAN YOU CAN CARRY!

Hear Harrison Wood, Interpreter of World Events, Every Sunday 3:00 P.M., E.S.T. over ABC. Consult Your Local Paper!

"ENGINEERED TRANSPORTATION" *Fruehauf Trailers*

EDITOR'S PAGE

Motaircargo

A FEW years back—as recently, in fact, as 1942—motaircargo as we know it today existed only in the vision of a few farsighted men. But times and people change. The practical realists who smiled indulgently when this publication, foreseeing that the future of aircargo depended upon organized rather than haphazard coordination of air and ground services, devised and first publicized the double-barrelled word "Motaircargo," as symbolizing this need, now realize that each passing day is bringing fresh evidence not only of motaircargo's reality but of its growing importance in the national and international distribution picture.

Events of the recent past are milestones in air transportation history. Of outstanding importance, is the announcement of Air Cargo, Inc., of pick-up and delivery arrangements with motor carriers in 144 of the cities served by the participating airlines. Equally important, as Dr. John A. Frederick points out elsewhere in this issue, is the fact that joint air-motor carrier transportation is now available to thousands of shippers and receivers in central states, located outside airport cities, as a result of agreements with some 850 motor carrier lines represented by the Central States Motor Freight Bureau of Chicago. Within the region affected only one standard shipping document will be required for the acceptance and delivery of freight. Plans to provide similar service in other areas now are going forward, Dr. Frederick tells us.

A long step in the simplification of ground service rates, heretofore a veritable hodge-podge of confusion, was taken when Air Cargo, Inc., filed with the Civil Aeronautics Board its revised pick-up and delivery tariff. Under the new simplified tariff, there are twenty-one rate groups applying to as many as twenty or thirty cities served by the airlines. Formerly there were almost as many tariffs as cities. In the pick-up and delivery arrangements thus far consummated, Air Cargo, Inc., has been able to obtain more favorable cartage rates than were previously being paid by the individual airlines. This saving is made possible by the fact that a definite schedule of service is arranged for all airlines serving a particular point thus assuring cartage operators of adequate tonnage.

These steps undoubtedly will lead to an increase in aircargo volume and this, in turn, will benefit distribution in many ways. It will profoundly affect the marketing of goods. Producers who have been limited to restricted marketing areas because of relatively slow ground transportation can now expand into national or international markets. Sales will be increased because aircargo makes a wider variety of goods available at point of sale. Aircargo will improve all modes of transportation by stimulating competitive modes to greater effort and to greater efficiency. It will increase the efficiency of ground handling which in turn will improve handling methods in other fields. It will make better packing and packaging necessary. It will encourage warehousing operations and may have the effect of simplifying financial arrangements and of standardizing insurance policies because the time element involved in the transfer of many commodities from buyer to seller by aircargo makes smaller inventories, faster capital turnover and short term insurance coverage feasible. Better service and maintenance in all these phases of distribution will be required also by the exigencies of new demands. In short, as we repeatedly have pointed out in these columns, the development of aircargo is quickening improvements in all aspects of distribution because the things that will facilitate better aircargo operations are the very things that are needed for more efficient and economical distribution.

While aircargo is making truly Gargantuan strides, as a perusal of articles in this issue will demonstrate, maximum development is dependent on several factors: 1. The number of aircargo services which eventually will become available. 2. The maintenance of performance schedules, despite weather. 3. An increase in airport facilities and the use of improved handling techniques and equipment. 4. Lower rates through the use of specially designed all-cargo planes and better loading facilities. 5. Fair and efficient public regulation based on an understanding of the inherent needs of aircargo transportation in relation to the best interests of the public.

D. J. Witherspoon

Editor.

NEXT MONTH

THE November issue will feature: THE ROLE OF TRAFFIC MANAGEMENT IN DISTRIBUTION . . . More and more, industrial traffic management is becoming a top management concern because it functions at every stage of physical distribution for greater coordination and efficiency. Outstanding traffic men and staff correspondents will discuss the expanding role of industrial traffic management in distribution.

•

PROFESSIONALISM OF INDUSTRIAL TRAFFIC MANAGEMENT . . . Dr. G. Lloyd Wilson, prominent transportation authority, discusses the "whys" and "wherefores" of The American Society of Traffic and Transportation and its unique role in raising professional standards and in furthering the advancement of qualified men and women. Dr. Wilson is well qualified to discuss the aims and objections of the A.S.T.T. since he was instrumental in its founding.

•

COORDINATED PACKAGING PROGRAM . . . "Men who move production should be consulted on package design." This is the theme of a constructive article by Fred Merish, special correspondent. Mr. Merish gives cogent reasons why top management and the sales and advertising departments must keep in close touch with all other departmental activities if losses and missed opportunities are to be obviated.

•

THE PUBLIC BE DAMNED has given way to THE PUBLIC BE SERVED . . . Public interest is a primary concern in the development of a national over-all transportation policy. Adherance to this policy has led the Congress to delegate wide regulatory authority to the ICC to combat unfair competition and thus further the use of all forms of transportation. Henry G. Elwell, traffic consultant, authoritatively discusses the regulatory powers of the Congress and the ICC in an article of unusual interest.

•

SEARS CURES AN L.C.L HEADACHE . . . The upswing in l.c.l. deliveries and terminal congestion posed a problem to Sears, Roebuck executives. Sears found that better "channelization of shipping" facilitated railroad consolidation, with consequent faster delivery and lower costs for both the railroads and the shipper. Randall R. Howard, special correspondent, hits the high spots in his step by-step outline of the new Sears l.c.l. improvement program.

LETTERS to the Editor

Thank You, Mr. Lodge

Sir:

I have read with great interest your Editor's Page in your August issue, just received, entitled: "Highway Transportation."

This is one of the very finest articles I have ever read dealing with the very perplexing problems of the Motor Freight Industry.

I congratulate you Sir, on your very excellent presentation of this matter and I hope every Motor Freight Association in every State of the Union reads this article with profit to themselves and to their members.

Such an article should surely warrant a flood of subscriptions for your magazine, DISTRIBUTION AGE.

—Lester L. Lodge, President, Werner & Dunn Trucking Co., Inc., Detroit, Mich.

Gummed Tape

Sir:

The second paragraph of the article "Gummed Tape for Safe Closure" by Don Budge in your June issue contains this statement:

> "The parcel post minimum requirement is that 60 pounds basis weight and not less than 2½" in width be used."

Our local post office officials say they can find no such regulation. Will you please advise as the authority for the statement?

—Edward T. Van Dyke, Traffic Manager, Hart & Cooley Manufacturing Co., Holland, Mich.

Editor's Note:

The Postal Bulletin of February 17, 1948, covers this ruling. Postal regulations covering the typing and fastening of parcels weighing 30 lb. or more were modified in Postal Bulletin 9-5-39, issued under date of Aug. 31, 1939 to permit the use of gummed tape, as follows:

"All tape to be used as sealing strips to be made of gummed cloth not less than 40 units Elmendorf test, 2 inches wide, or gummed paper tape 3 inches wide made of No. 1 kraft paper, 60 lb. test, and be firmly glued to the container. All seams to be covered with sealing strips. The sealing strip over the center seam to extend 2½ inches over the edges.

"Where any flat side or sides of the container measures 18 inches or more a reinforcing strip of not less than 3 inches, 60-pound kraft paper, or 2-inch cloth tape shall be applied at the center of the parcel, completely circling the container."

A Postal Bulletin dated March 16, 1942 further modified the above ruling as follows:

"The order of August 31, 1939 which appeared in the Postal Bulletin of September 15, 1939, under the above head is modified to permit the use of gummed paper tape 2½ inches wide made of No. 1 Kraft paper—60-lb. test where 3-inch wide gummed paper tape has heretofore been required."

Multiwall Paper Bags

Sir:

I read with interest Fred Hester's article on "Multiwall Paper Bags" in the August issue of DISTRIBUTION AGE.

From 1923 to 1947, I was connected with the traffic department of the beet sugar industry and traffic manager of the second largest company in the United States, and before joining this organization was assistant traffic manager of the largest beet sugar company in the United States. I know from experience that the beet sugar industry used both the Bates valve bag and the open mouthed bag in sizes from 2 lb. up to 100 lb.

At the beginning, we had considerable difficulty with stacking the paper bags in the sugar company's warehouse and with breakage. However, I believe both difficulties have been overcome profiting from earlier experience.

I know the paper bags are generally used in the sugar industry although I fail to find any mention of that fact in your article.

M. P. Hester, General Traffic Manager, Riss & Co. Inc., Kansas City, Mo.

Sir:

I have read with interest Henry G. Elwell's article in your July issue, "Household goods—rail vs. truck." In part you state: "when shipping by railroad the household goods shipper must pack all goods in crates, etc., in accordance with tariff requirement." I would like to call your attention to Consolidated Freight Classification No. 18, Item 24235, which reads in part: "must be fully protected by boxing, crating or wrapping." Therefore, it is not necessary to crate all goods. In 1932 we originated the idea of shipping household goods by rail eliminating crating wherever possible and we feel this is the practicable way to ship on long haul.

—C. A. Miller, General Movers, 1213 W. Carroll Ave., Chicago.

WINTER'S TOUGH ON TRUCKS— GET 'EM READY NOW!

THE RIGHT TRUCK FOR EVERY JOB

International builds the *only* complete truck line—a truck of the right type, size and power for every delivery and hauling job.

***International*— Standard of the Highway**

TRUCKS must give top-grade performance in winter. Let *International* winterize them *now*. International Dealers and Branches are ready:

- With precision tools and machines to analyze and correct truck problems.
- With factory-trained mechanics.
- With International Parts that fit accurately, wear better and last longer because they are just like the originals in International Trucks.
- With International Exchange Units—rebuilt by factory methods to perform like new and to cost you less than new units do.
- And with International-Approved Truck Accessories to increase efficiency, safety and driver-comfort.

For expert maintenance service that provides truck-stamina for tough winter operation, take your trucks to your nearby International Truck Dealer or Company-owned Branch *NOW!*

Tune in James Melton on "Harvest of Stars." CBS Wednesday Evenings.

INTERNATIONAL INTERNATIONAL **Trucks**

The Famous Line of Great Trucks

Motor Truck Division • INTERNATIONAL HARVESTER COMPANY • Chicago

NAILABLE STEEL FLOORING
cuts costs for carriers—
AND SHIPPERS, TOO!

EMPTY CARS

Are Profit Eaters!

ALL-PURPOSE
NAILABLE STEEL FLOORING*

Handles the Freight and
BRINGS IN THE REVENUE

These photographs show why shippers can't load rough, heavy freight in wood-floor gondolas or blocked loads in conventional steel-plate-floor cars. The result?—when a shipper's incoming freight and outgoing products require different types of flooring, his sidings fill up with useless empty cars. You've got to haul these away and send him *additional* cars with floors suitable for his outbound lading. If his plant isn't near one that can use and supply these empties, it means long non-revenue hauls. And in any event, this switching and assembling of empty cars is a profit eater for the carrier and a nuisance for the shipper.

Contrast this with the situation when a shipper receives his incoming freight in gondolas equipped with NAILABLE STEEL FLOORS. He can use the same cars for his outgoing products because NAILABLE STEEL FLOORING is suitable for *all* types of open-top lading—rough freight, finished goods, fine bulk commodities; steel scrap, farm machinery, core sand. If there's a load available, the gondola with the NAILABLE STEEL FLOOR will take it—and not require an empty haul. For railroads this means lower operating costs and more revenue; for shippers, better car supply.

Check the shippers on your line to see how many get open-top cars in their plants that are unsuitable for their outbound lading. We think you'll find you can ease car shortages and *save money* by converting your gondolas to *pay-load* cars with NAILABLE STEEL FLOORING.

Rough Freight Demands a Steel Floor

Finished Freight Demands a Nailable Floor

NAILABLE STEEL FLOORING
A GREAT LAKES STEEL PRODUCT

*PATENTS PENDING

GREAT LAKES STEEL CORPORATION
STEEL FLOOR DIVISION, PENOBSCOT BLDG., DETROIT 26, MICHIGAN
UNIT OF NATIONAL STEEL CORPORATION

MOTAIRCARGO IN HIGH GEAR

Joint air-motor transportation is increasing in scope. This is accompanied by a simplified and coordinated system of tariffs for certificated airline route cities. These two basic steps in the integration of transportation indicate that coordinated air-motor cargo transportation has come of age.

By JOHN H. FREDERICK

Aircargo Consultant

MOTAIRCARGO — coordinated motor and air cargo transportation—is now definitely here and in operation. Three recent happenings prove it.

1. Air Cargo, Inc., the ground service cargo organization of the certificated airlines announces that it has contracted with local motor carriers to provide pick-up and delivery service in 144 of the cities served by these air carriers. In 125 of these cities, Air Cargo, Inc., maintains downtown terminals for shipper convenience. Smaller cities adjacent to points directly served by air carriers but included in the door-to-door pick-up and delivery pattern now in operation total two thousand additional points. In addition to regular pick-up delivery service, expedited special service is available when desired by shippers or receivers.

Approximately 700 vehicles are used daily by air cargo contractors for ground service. A standard red and gray color scheme is used for these vehicles, one of which is shown in the accompanying illustration.

2. Joint air-motor carrier transportation has been made available to thousands of shippers and receivers not located directly at airport cities in the territory of the Central States Motor Freight Bureau of Chicago. Air Cargo, Inc., has entered into joint tariffs with some 850 motor truck lines represented by that Bureau. These truck operators serve the area east of the Mississippi to Buffalo, Pittsburgh and West Virginia and north of the Ohio River to the Canadian Border.

Within this territory, shippers, receivers and carriers will be able to apply the new uniform rating for all shipments moving partly by air and truck, and the actual interchange of such traffic will be speeded by the expedited handling

(*Continued on Page* 57)

BERLIN

Air Force Photo

Giant U. S. Air Force C-54s lined up at Rhein-Main Air Base, Frankfurt. These four motored carriers contrast with the small two-motored C-47s shown on this month's cover.

IN eighty days, the world has witnessed the "impossible" by air. Prior to June 21, 1948, air cargo enthusiasts were looked upon as visionaries when they tried to show that eventually whole communities might receive during emergencies all necessary freight by air. Even then, when pinned down they would admit their predictions did not include bulk freight such as coal and oil.

Beginning on June 21st of this year, the mass movement of goods by air was subjected to a test which, except for the unusual exigency of the Berlin embargo, might not have been made for years. It is this test of the capacity and economy of wholesale movement by air which deserves careful consideration and analysis quite apart from the political implications of the situation. In fact, with attention riveted upon the politico-military features of the stoppage of all movement of goods by rail, truck and water into the Western sectors of Berlin, it is not surprising that this astonishing proof of the almost limitless potentialities of air freight was almost ignored.

For the purpose of considering the lessons of this air achievement we will examine the overall picture rather than being concerned with each component arm—the U. S. Air Force, the British land planes and flying boats and contributions from French, Canadian, Australian and other air forces as well as chartered planes of regular commercial carriers. These are merely details of how the air-power was made up. The broad picture is as follows:

The three Western sectors of Berlin comprise a population of some 2.3 million. These sectors are completely surrounded by the Soviet Zone of Germany. Using "technical difficulties" as the excuse, first rail traffic and, shortly thereafter, over-the-road and canal traffic to the Western Sectors of Berlin were closed by the Soviet authorities during the early weeks of June.

The only means of ingress and egress in Berlin for the Western powers were the three approved airlanes. All past experience indicated that a virtually complete blockade had been imposed. Beginning on June 21, some food and medical supplies were flown in. By June 26, the movement had established a pattern for a round-the-clock movement of essentials from the railheads in the American and British zones by air to Berlin where, coordinated with truck

AIRLIFT

. . . a 585-mile-long conveyor. EIGHT MILLION POUNDS and more move over that belt every twenty-four hours, fair weather or foul.

This is modern materials handling: a continuous flow which is getting the right goods to the right places, in the right quantity, at the right time. All the agencies of transportation are involved . . . air, truck, rail, sea . . . all funneling into the airlift terminal at Frankfurt. Above all, it is integration of all these and other distribution activities, thus creating a complete distribution system.

Perhaps not perfect! The costs are still high. But the outlay curve is dropping fast; so fast that businessmen are awakening to the realization that soon, very soon, the age of bulk cargo transportation by air will be upon us.

By CHARLES L. SAPERSTEIN
Packaging Consultant

The Berlin airlift, on a cost per ton mile basis, does not represent commercial costs on a comparable volume. Two-way loads are customary in commercial operation and night flying would not be so vital a necessity.

Mass commercial bulk cargo air shipments, minus the emergency liabilities of "Operation Victuals", are feasible at sharply reduced cost.

Fuel oil brought in by huge C-54s lined up to one side of Berlin airfield. In the background are coal piles ready to be trucked away.

Photo by Acme

plus rail and water facilities within Berlin, the goods would reach the final outlets of distribution.

Together, the combined American and British airlift soon reached a thousand, then eleven and twelve hundred tons a day, or better than a pound of supplies for each person. By the end of July this volume had passed 2.000 tons and was approaching 2,500 tons. In the meantime, industry and essential services in Berlin were threatened by lack of power and the airlift was extended to include hundreds of tons of coal and fuel oil daily. By the end of August, volume had reached and on several days exceeded a total of 4,000 tons of all types of cargo, equal to nearly four pounds of supplies for every man, woman and child.

(*Continued on Page* 90)

Aircargo

Endless belt, which can be raised to desired height.

AIRCARGO HANDLING EFFICIENCY
is being realized through:

- Adoption of the palletized unit load principle;
- Wider doors, portable winches, interior floor tracks for unit-load shifting, etc.;
- Motorized conveyor belt installations;
- Slide chutes for small-unit cargo unloading;
- Increased use of fork lift trucks.

LEADING air transportation companies, spurred on by expected large increases in their aircargo tonnage, are giving attention to the improvement of their cargo handling procedures. A large increase in aircargo tonnage is likely partly because of two recent air traffic developments. One of these is the first truck-plane tariff filed with the ICC, effective on September 1, which authorizes 850 motor carriers operating in the Central States to participate in aircargo shipping through Air Cargo, Inc., the ground pickup and deliver service organization of the certified air lines.

This development will be supplemented by the Air Parcel Post service. Parcels so shipped may thus utilize the facilities of our vast national postal system and these air parcels will be afforded very much the same preferential type of handling as airmail. Packages for Air Parcel Post will be accepted up to 70 lb. in weight and not exceeding 100 inches in combined length and girth.

However, based on statistical tabulations by the Post Office Department, it is possible, according to some aircargo spokesmen, that two-thirds of air parcel post shipments will be under 5 lb., and possibly 80 percent will be under 10 lb. It is believed also that within one year at least 25 percent of all parcel post shipments will be by air even though air parcel post rates will be five times rail parcel post rates. He adds that the chief incentive which will develop this

Handling Marches On

Aircargo is devising new specialized handling methods which are increasing efficiency and reducing the cost burden . . . Mr. Howard details the progress made by one of the topflight air carriers in these directions

By RANDALL R. HOWARD *Special Correspondent*

predicted shift is the fact that trans-continental air parcel post delivery will be overnight, as compared to the several days now required for rail trans-continental parcel post deliveries.

As a result of these developments, several carriers have been actively conducting research and making operating changes to streamline their aircargo handling facilities and methods. One of the leaders has been United Air Lines. This company, with 16 airports and call service at 77 cities has a growing cargoliner fleet of 3-ton C-180's and 6-ton C-230's. The improvement program in aircargo handling includes special tests under way at the airline's Denver Operations and Engineering headquarters, where basic studies for the improvement of service and operating procedure are being made. The Denver tests have been giving special attention to extensive and standardized palletizing of air cargo shipments, with the result that experimental cargo loading has been "speeded nearly five times over conventional methods." These favorable results were obtained from handling experiments conducted at high volume freight points along the company's airways.

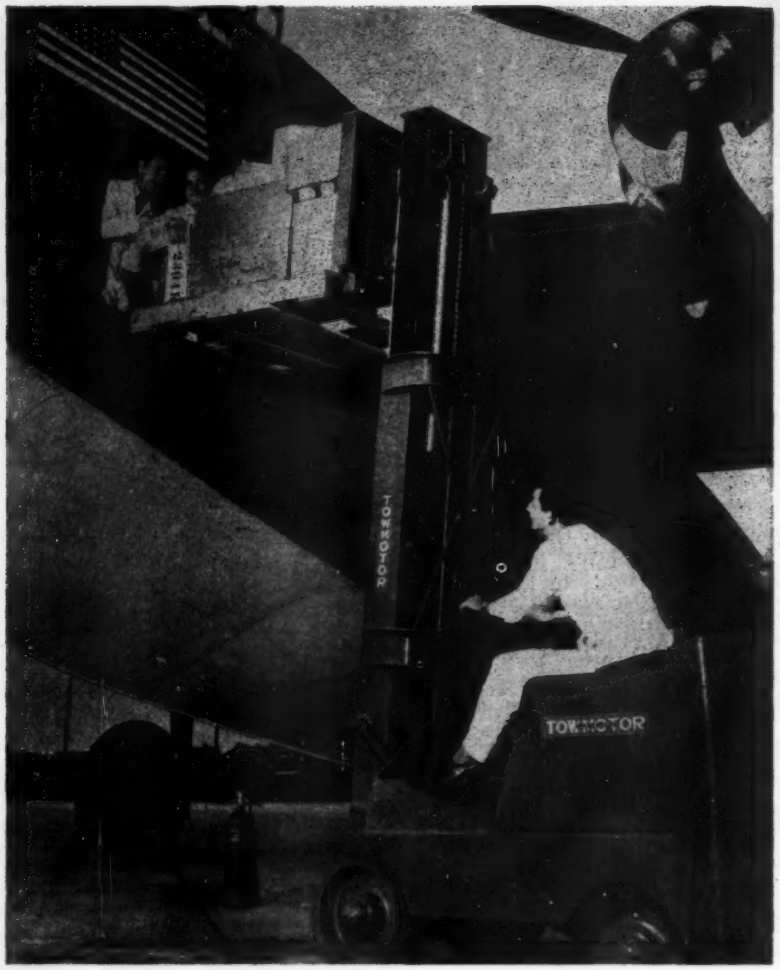
In these tests, the pallet, usually of light weight magnesium, was 30 by 36 in. Bundles and packages were firmly secured, and the preloaded pallet then was put aboard

(*Continued on Page* 85)

Palletized load lifted by fork lift truck to opening which approximates width of pallet.

Specially designed magnesium pallet which, once aboard plane, can be skidded into place.

DISTRIBUTION STANDARDS and SPECIFICATIONS



Air Transportation

Air transportation has energetically promoted the use of standardized equipment and techniques. These are furthering the coordination of all forms of transportation in the interest of more efficient distribution.

By BENJAMIN MELNITSKY,
Special Correspondent

IT has been within the lifetime of the youngest draftee that distribution has sprouted wings and taken to the air. And only since World War II have these wings been capable of carrying even slightly impressive loads. Yet, in these few years, air transportation has established itself firmly as an important part of distribution. At the beginning of 1948 the number of American airports was 5,850, an increase of 1,360 over the previous year. Between 1946 and 1947 the amount of domestic ton miles of express and freight carried by American airlines rose by 84.8 percent from 38,608,737 to 71,363,600. In this same period international air express and freight carried by American airlines more than doubled, rising from 15,092,127 ton miles in 1946 to 39,312,300 in 1947.

As for standards in this phase of distribution, it can be stated that present signs indicate a hopeful future. Being young and fresh and unhampered by an inhibitory burden of entrenched ideas and

out-dated methods, air transportation can acclimitize itself to the standards force. That such is the case will be demonstrated separately for international and domestic air transportation. First the global standards picture.

Air and water transportation both are international in their scope; yet, in terms of standardization, the former is tremendously more advanced than its tender years might indicate. In the countless generations during which American bottoms have sailed the seven seas, they have done so minus the guidance of international standards; aviation, a mere child, has in its few years made admirable progress in world-wide standardization.

The first faltering steps toward effective international air standardization were taken at the ill-fated 1919 Paris Peace Conference where there was organized an International Commission for Air Navigation (ICAN). Like other measures aimed at world cooperation in this period between wars, ICAN floundered more than it flourished, it existed but accomplished little. Another product of these times was the International Technical Committee of Aerial Legal Experts (called CITEJA, initial letters of its French designation) which was organized in 1925 for the purpose of developing an international code of air law. Lacking the proper environment for smooth functioning, this group also languished. The Pan-American Convention of Air Navigation, created at the 1925 Pan-American Conference in Hanava, attempted international cooperation in air transportation on a hemispheric basis, but here too little of a practical nature was accomplished and no standards were forthcoming.

The rest period between rounds in a prize fight is a poor time to promote a feeling of brotherly love between contestants or among spectators; so too was the brief breathing spell between wars. It is significant—and in the nature of a happy augury—that post-World War II attempts at standardization of international air transportation are progressing

(*Continued on Page* 66)

CHECK LIST OF STANDARDS FOR AIR TRANSPORTATION

Air Transport Assn. of America, 1107 16th St., N.W., Washington 6, D. C.
- "ABC's of Packaging for Air Cargo"
- "Packaging and Handling"

Aircraft Industries Assn., 610 Shoreham Building, Washington 5, D. C.
- "National Aircraft Standards Alphabetical Index" ..... FREE
- "National Aircraft Standards Numerical Index" ..... FREE

Civil Aeronautics Adm., U. S. Dept. of Commerce, Washington, D. C.
- "The CAA (CAA Aviation Information) 1948, 12 pp. ..... FREE

Civil Aeronautics Bd., Washington 25 D. C.
- "Uniform System of Accounts for Air Carriers," CAB Form 41 Manual, 1947 ..... FREE
- "A Statement of the Functions of the CAB by J. Landis," 1946, 9 pp. FREE
- "CAB Safety Bulletins" (free in small quantities) ..... FREE

International Air Transport Assn., Central Stations Building, Montreal, Canada.
- "Facts about IAFA," leaflet, 8 pp. ..... FREE

International Civil Aviation Organization, Dominion Square Building, Montreal, Canada.
- "What is ICAO" ..... FREE
- "Price List of ICAO Standards and Recommended Practices" ..... FREE

National Fire Protection Assn., 60 Batterymarch St., Boston 10, Mass.
- "Air Rescue and Fire Fighting, Suggested Standard Operating Procedures for" T100b. 1947 ..... $0.25
- "Airplane Crash Fire Fighting Manual" C16. 96 pp. $1.00
- Airport Aircraft Fire Protection" D1a $0.15

Society of Automotive Engineers, 29 West 39th Street, New York, N. Y.
- "SAE Aeronautical Material Specifications, Price List" ..... FREE
- "SAE Aeronautical Standards, Price List" ..... FREE

The Tire and Rim Assn., Inc., 2001 First-Central Tower, Akron 8, Ohio.
- "1947-1948 Year Book" $3.00

United Fresh Fruit and Vegetable Assn., 1013 13th St., N.W., Washington, D. C.
- "Fresh Fruits and Vegetables, Air Freight for" ..... FREE

Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.
- "Blueprint for World Civil Aviation (Dept. of State Publication 2348, Conference Series 70) 34 pp. $0.15
- "International Civil Aviation Conference, Chicago, Ill. November 1 to December 7, 1944. Final Act and Related Documents" (Dept. of State Publication 2282, Conference Series 64) 284 pp. $0.45
- "International Civil Aviation 1945-1948" Report of the U. S. Representative to ICAO (Dept. of State Publication 3131) 40 pp. .. $0.25
- "Civil Aeronautics Act of 1938" Public Law No. 706, 75th Congress .. $0.10
- "Air Transport of Agricultural Perishables." Miscellaneous Publication No. 585. 1946. 44 pp. (Interbureau Committee on Postwar Programs) $0.10
- "Airport Building" 1946. 86 pp. (Civil Aeronautics Administration) $0.20
- "Airport Design" 1944. 74 pp. (Civil Aeronautics Administration) $0.15
- "Ground Loads Handbook" 1941. 20 pp. (Army-Navy-Civil Committee on Aircraft Design Criteria, ANC Bulletin 2) $0.10
- "Civil Aeronautics Manuals" (Civil Aeronautics Authority)
  - Production Certificates. 1945. 16 pp. $0.10
  - Airplane Airworthiness. 1945. 193 pp. $0.45
  - Maintenance, Repair, and Alteration of Certified Aircraft, Aircraft Engines, Propellers, and Instruments. 1943. 133 pp. $0.50
  - Air Traffic Rules. 1946. 32 pp. $0.15
- "Civil Air Regulations" (Civil Aeronautics Board)
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  - Rotocraft Airworthiness. 1946. 14 pp. $0.10
  - Aircraft Airworthiness, Limited Category. 1946. 1 p. $0.05
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  - Air Carrier Operating Certification. 1946. 12 pp. $0.10
  - Certification and Operation Rules for Scheduled Air Carrier Operations Outside the Continental Limits of the U.S. 1946. 16 pp. $0.05
  - Nonscheduled Air Carrier Certification and Operation Rules. 1946. 6 pp. $0.05

(*Continued on Page* 66)

A materials handling system cannot function efficiently without properly trained supervisors.

TRAINING FOREMEN IN MATERIALS HANDLING

A detailed discussion of the steps necessary in training supervisory personnel in the proper use of modern materials handling equipment. Mr. Howard tells how International Harvester solves this pressing need and affords industry a striking pattern for efficiency.

By RANDALL R. HOWARD, *Special Correspondent*

THOUSANDS of foremen and other supervisory personnel of the International Harvester Co. of Chicago are now being afforded the opportunity of attending a series of educational training classes designed to standardize and improve materials handling methods.

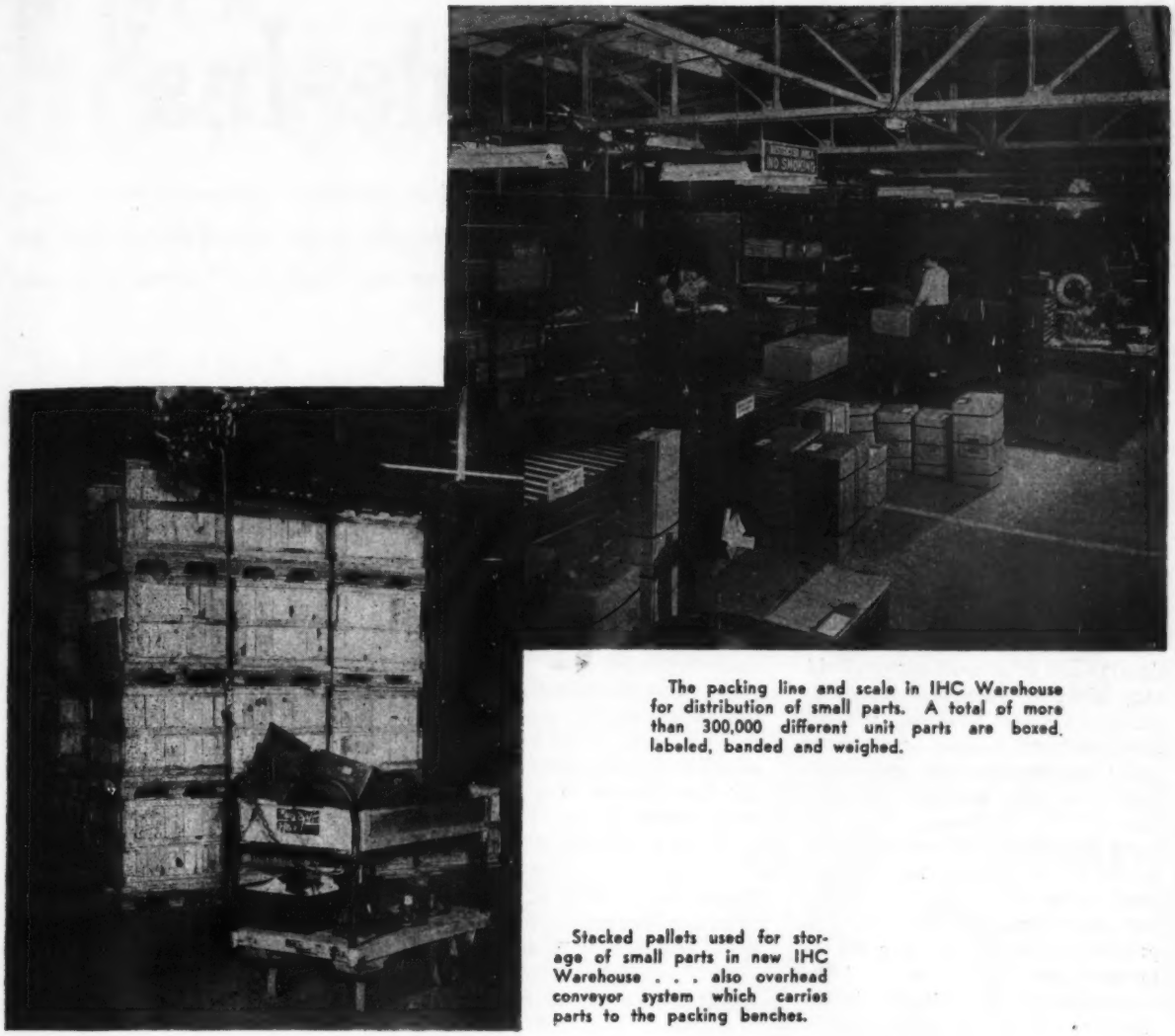
These training classes will be attended by IHC supervisory personnel whose activities are directly or indirectly concerned with materials handling. And this of course will include practically all IHC employees at this level, since the company operations, in the manufacture and world-wide distribution of farm machinery including farm tractors, industrial power, motor trucks and refrigeration products, necessarily requires the annual handling of millions of tons of basic raw materials and also the distribution of more than 300,000 different finished unit machines and parts. Then in the follow-through of this program, it shall become the task of each IHC foreman who takes the training course to put over among his own group of workers these improved standardized methods in materials handling.

In a number of IHC manufacturing works these training classes are already under way. A training class normally will be conducted through nine sessions totalling ten hours. For instruction use there are two newly prepared publications of letter-head size. One is a 28-page booklet on "Materials Handling" which describes the company materials handling methods; and the booklet includes illustrations to show many of the standardized units of handling equipment in use by the company.

The second new publication is a "Lesson Plan" booklet of 16 pages for the class instructor. It states that the class sessions have these two objectives: 1. To give works supervisory personnel a working knowledge of the objectives and methods of materials handling. 2. To review the foremen's part in efficient materials handling and explain the organizations established to help him.

As aids, the instructor is advised to use the following four kinds of help:

1. A blackboard.
2. A "visualcast" machine with



The packing line and scale in IHC Warehouse for distribution of small parts. A total of more than 300,000 different unit parts are boxed, labeled, banded and weighed.

Stacked pallets used for storage of small parts in new IHC Warehouse . . . also overhead conveyor system which carries parts to the packing benches.

38 listed pictures. These pictures are shown in enlarged form, for class information and to develop discussion. They include some of the older types of materials handling equipment and handling methods which the company has discarded; and in contrast, the newer methods and types of standardized equipment.

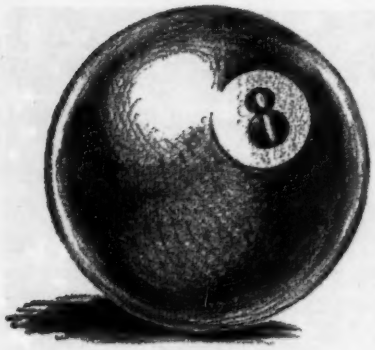
3. Materials handling movies. These are shown to illustrate the No. 1 mechanized equipment in action; the most effective of these is "Materials on the Move," a 28 minute movie. Then two 22-minute movies, "The Fork Truck" and "Operator's Care and Maintenance of Materials Handling Euipment." These films are available from the U. S. Navy Department. The third is a 7-minute silent film, "Safe Handling of Materials," made at several IHC Works. It shows various methods of unloading materials such as steel, coal, lumber and bar stock. 4. Reference material. This includes the IHC "Materials Handling Manual," and the IHC "Product Protection Manual."

It is suggested, in the introduction to the "Lesson Plan" booklet, that the class instructor must impress the following on his students from the beginning: "1. The importance of proper materials handling methods. 2. Describe the necessity of getting materials through the plant speedily; 3. Emphasize how better materials handling methods will increase the capacity of the plant. 4. Make sure that students have a good understanding of the objectives of materials handling and of the basic principles that make efficiency and economy. 5. Stress the foreman's role in materials handling, for he is the only one who can make better methods work."

The instructor also is reminded that "although nearly all students will have a good fundamental knowledge of the materials handling equipment described, many of them will not be familiar with the economic aspects of the proper use of such equipment. Therefore, the instructor should proceed slowly when discussing such matters."

It is planned that the new training course in materials handling which will be taken by IHC fore-

(*Continued on Page* 40)



"Trade-Ins"

The market for used materials handling equipment poses many problems . . . In this article, Mr. Potts warns that buyers are apt to find themselves behind the "eight ball" unless they take precautions.

By MATTHEW W. POTTS
Materials Handling Consultant

THERE is always a question of value present when second hand equipment of any kind is purchased. At present many people buying used automobiles who, under normal production and sales conditions, would stay clear of second-hand equipment. Today, however, second-hand units are bought of necessity and the attendant risks and inconvieniences are accepted because they are concomitants of second-hand equipment. Of course, there is always a market for second-hand units, but this market, speaking generally, exists only for the prospective buyers who are unable to meet new unit prices.

Frequently an industry is inclined to follow the pattern set by another industry and to fall into ways which are unprofitable for both the industry and its customers. This is the situation now facing the materials-handling industry.

In the past, most materials handling equipment was sold on a new unit basis for the reason that only the more progressive and larger organizations were a market for this type of equipment. Purchasers were able to pay the new equipment prices. Now, however, many marginal operators who have been sold on the economies that are realizable through mechanized handling are desirous of owning such equipment. As a result, we find a growing demand for used materials-handling equipment. Some branches of the materials-handling industry are fostering this new market. Others are resisting it. For example, electric industrial truck manufacturers, will not accept in most cases "trade-ins." The industry has established a policy of a turn-in allowance per machine unit towards the purchase of a new machine. This allowance is based on the understanding that the customer will destroy the used machine or sell it as junk only. In this way the development of a used equipment market in the electric industrial truck field is prevented.

The gasoline truck manufacturers who work through distributors currently are advising these distributors to accept trade-ins and rebuild equipment for sale in the used equipment market. At first glance, this looks like profitable business. As time goes on, however, the situation will become like the used car situation before the war, when car dealers had trouble disposing of used car units and new units at the same time. Road machinery and contractor equipment builders have for years had a trade-in policy, but they have been able to control the used equipment market because the number of contractor-users is limited and because large contractors will buy new equipment only. This equipment generally is so badly worn by the time it is available for the used equipment market that only a small amount can be taken in trade. This is passed on to smaller contractors as rebuilt or used equipment.

Before the war, dealers and distributors of this type of equipment were beginning to feel the pinch of the used machinery market. Most of them had units in storage yards and these units constituted tied-up capital which could not be liquidated easily. Some of these dealers were fortunate in being able to unload all of this equipment as a result of the government's demand for units. Today, the demand for new equipment is exceeding the output; consequently, producers and distributors are not greatly concerned over the trade-in problem. However, it remains a threat of the future—and one deserving of much thought—if a repetition of prewar difficulties is to be avoided.

Some years ago Crosby Fields, an engineer, suggested that used machines, whether materials-handling equipment, production equipment, etc., should be depreciated at a given rate and destroyed when a pre-determined depreciation point was reached. This, he suggested, would make for more jobs in the production field and would prevent production equipment falling into the hands of

(*Continued on Page* 84)

WANT A

10-FOOT LIFT?

Get the telescopic *WORKSAVER*

TILTING FORK ELECTRIC TRUCK

Double-Acting Hydraulic Lifting Ram

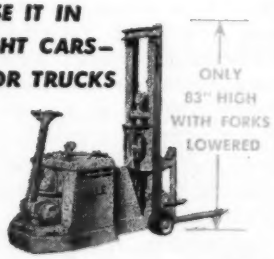
***Electric* LIFT *Electric* TRAVEL**

Pallet loads, skid bin loads, loads with stringers attached—all can be piled high with this new 10-foot lift Worksaver. It gives you every advantage of available cubic footage in storage areas, in freight cars and motor trucks.

It's just the right truck for easy, fast and safe operation wherever clearances are low, wherever aisles are narrow. That's because it's only 83" high with forks lowered, and 33" wide. And the Telescopic Worksaver is rugged, powerful, economical to use. There's ample battery capacity for two days' operation without recharging.

So if you want to cut your production costs—if you want to put new speed into handling operations—the new Yale Telescopic Worksaver is the time, effort and money-saving electric truck for you. Get all the facts. See the classified section of your telephone book for our nearby representative or send for bulletin M-123. The Yale & Towne Manufacturing Company, 4526 Tacony Street, Phila. 24, Pa.

USE IT IN FREIGHT CARS—MOTOR TRUCKS



CAPACITIES

2000 LBS.
up to 48" load length

2500 LBS.
up to 36" load length

3000 LBS.
up to 28" load length

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INDUSTRIAL SCALES • HOISTS—HAND AND ELECTRIC • TRUCKS—HAND LIFT AND ELECTRIC

Western Transportation Problems

Motor transportation in the western states differs from that in the East . . . Truck design is generally ahead of highway design, but there are still some problems left to be solved.

By TED V. RODGERS

Chairman of Board of Directors American Trucking Assns., Inc.

TRANSPORTATION problems in the 11 western states differ from those in the eastern part of the country largely in the sizes of pay loads, in the difficulties of mountain operation, and in the extent to which motor carriers serve the overall economy of the region. I believe it is conservative to say that the great and later development of the Rocky Mountain and West Coast region has been made possible by automotive commercial vehicles.

More Liberal Weights and Lengths in West

I think nearly everyone is aware that line-haul vehicles and loads are much larger in the 11 western states than in the East. Before considering the sizes of typical vehicles, let us briefly review the historical development of high ways and highway weight and length limitations in the West.

Motor trucks were found to serve best the general economy of the vast western states, because their services could be very flexible to meet the growing needs of the originally sparsely settled areas. Further, in serving these areas trucks can use direct and shortest routes, thereby giving faster service. This is especially true in regard to north and south movements. Trucks were, and are, the primary and basic carriers of general freight in the vast hinterland areas and they have done the job well. For these reasons, trucks have not been arbitrarily restricted to local cartage work or to minor positions as railroad auxiliaries.

It appears that as roads and bridges were improved, highway officials planned to anticipate transportation needs in terms of freight transportation beyond the needs of passenger cars. As rather large vehicles were already in use, and as the communities were in favor of efficient truck service, the highway improvement program anticipated large gross loads. Thus, when regulation and legislation came about, the load limits and lengths were more liberal than those which exist in the East. In recent years automotive design caught up with and passed these apparently liberal allowances, and the common carrier truck industry in the western states wants still larger capacity vehicles, despite a seemingly adverse terrain.

Western Operating Conditions

There are long stretches of level roads in the western states where road speeds can be the equal of those obtained in the East. One of the real problems is a suitable performance compromise between level road speed and ability on the mountain grades.

In traveling over different mountain passes which may vary in elevation between 5,000 and 11,000 ft., trucks may be on continuous grades for as long as 20 miles. From this you can appreciate the need for horsepower under the hood and a number of closely placed gears in the transmission which will permit the best use of all available horsepower to maintain mountain road speed for an hour or more.

Diesel engines have a relatively narrow speed range in which optimum performance can be obtained. In order to have the gear steps close enough together so that engines will not be overspeeded or lugged in any gear to the detriment of the engine or the road speed, it is necessary to have more than five speeds forward in the transmission system. With ten or more speeds in the transmission system, the driver has an opportunity to select a gear which will give him maximum road speed with engine r.p.m. for maximum horsepower.

At present, most of the available compound transmissions require double shifting in order to obtain correct selection of the proper gears for varying grade conditions. This double shifting operation is burdensome and dangerous, since it frequently requires a two hand manipulation of two shifting levers. There is now available a power shifting mechanism

(*Continued on Page* 32)

An address before the Detroit section of the Society of Automotive Engineers.

Steps enclosed inside the doors! Spine-saving new riding comfort!

Improvement after improvement spotlights the new 1949 Studebaker trucks!

EVERYWHERE you look, you see advancements in these 1949 Studebaker trucks that are new to you—and new to truck designing!

These husky, handsome, new Studebaker pace-setters have a dramatic new kind of styling to begin with! Sweeping streamlines from low front end all the way back!

New colors, too, as well as new contours—"new look" fenders flaired into a low-swung hood—a lower cab—a massive new grille—a rugged two-tone bumper!

No slippery running boards—the steps are enclosed! The wide doors have "hold-open" stops!

It would take pages of this publication to describe everything that's new and different in the revolutionary 1949 Studebaker trucks. Stop in and see them for yourself at a nearby dealer's.

More truck models than Studebaker ever offered before! An extensive new range of sizes and wheelbases!

Cab equipment includes window wings, foot-operated ventilators, automatic cab light, ash tray—two arm rests, windshield wipers, sun visors. Studebaker's exclusive Truck Climatizer heating and defrosting system is available at extra cost.

STUDEBAKER TRUCKS

NOTED FOR LOW-COST OPERATION

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A new kind of lift-the-hood accessibility—No standing on a box to get at the engine and ignition! No fumbling under the dash panel to adjust instrument panel and accessory connections. The close-set fenders and wide-opening hood of the 1949 Studebaker trucks make it easy even for men of small stature to reach everything without strain.

THE oil industry's progress in the future will be achieved through technological improvement in distribution, according to O. F. Minor, assistant to the vice president, marketing, Shell Oil Co. Mr. Minor told a group of oil men in Nashville recently that the industry has long used the skill of scientists and engineers to raise its manufacturing operations almost to peak efficiency, but he insisted that there is still great need to make those same engineering principles work toward more efficient distribution.

In discussing the streamlined program for which Shell last winter received the American Society of Mechanical Engineers Award for "Outstanding Progress in Petroleum Distribution," Mr. Minor said that distribution covers the entire range of operations from the time the product is produced in finished form until it is delivered to the ultimate consumer. It includes such diverse phases of the oil industry as warehousing, trucking, finance, selling, advertising and accounting—each of which presents opportunities for scientific improvement.

In bulk depots of the future, costly pumphouses will probably be replaced by weatherproof pumps and motors, set outdoors. Shoulder height loading ports in trucks may eliminate expensive loading racks. Warehouses will be built smaller, with floors at ground level, because fork trucks, palletizers and other hydraulic lifting devices will permit higher, safer stacking than manual methods do.

Trucks themselves will probably continue to carry about the same loads because of weight regulations, but they will be equipped to load and unload faster, thus reducing turn-around time and raising distribution efficiency still further.

At the dealer level in the distribution system, Mr. Minor foresees an increasing trend toward larger storage capacity at stations. This will reduce the number of trucks needed for deliveries; it will permit bee-line routings on better schedules and eliminate emergency deliveries; and it will aid the dealer by reducing drive-away tie-ups and assuring him of adequate supplies in case of unexpected surges in business.

Possibilities for improvement in personnel are less tangible than those in warehousing and trucking, but they are just as important. The salesman of the future will add to his personality and sales ability a solid groundwork in the knowledge of petroleum marketing economics. Pointing out his own company's conviction of the importance of having the finest personnel available for the future era of distribution, Mr. Minor said that Shell, during the past year alone, has trained 750 men in its marketing department in all phases of distribution. It is only with the aid of well-trained men applying the same technological skill that has gone into manufacturing that the industry can be sure of achieving the economies so important to future progress.

Transportation Problems

(*Continued from Page* 32)

for compound transmissions, but this device does not change the incorrect principle of requiring a double shift in order to select adjacent gears. Julius Gaussoin and a group of motor carriers out in Oregon have devised a new transmission gear shifting pattern which, I am told, will permit a progressive selection of as many as fifteen uniformly spaced gears with only two double shifts in the entire range.

Brakes Are a Problem

Braking requirements for the large vehicles and combinations used on the West Coast can be divided into two phases; first is the stopping ability, and second is the retarding ability on grades. Insofar as stopping performance is concerned, the present brake design apparently is adequate but is too slow in action on combinations 60 feet long. In other words, after the brakes get into action the stopping performance is as good as it is on lighter and smaller vehicles.

However, present brake equipment will not enable the stopping of a 60 ft. combination in 30 ft. from 20 miles an hour measured from the place where the brake pedal is first depressed, because of operational lag in the system. Here is one place where there is a great need for improvement in design, and a reduction in the lag of power brakes appears to be the problem in improving stopping performance.

The second phase of mountain braking is the retarding action needed on long grades. There appears to be some need for a retarder which would employ a principle other than the wearing of brake lining to produce the retarding effect. As you may know, there has been considerable work along these lines in both electric and hydraulic retarders. However, present devices of this type add considerably to the tare weight of the vehicle. The western operators are not entirely unanimous in re-

(*Continued on Page* 42)

The Eaton Planetary System Minimizes the Load on Each Gear Tooth with Resultant Longer Life

In Eaton's exclusive planetary system, the gear load is divided over four planetary pinions. Hence, the pound load per inch of gear tooth face is relatively low, and possibility of fracture under severe service conditions is minimized. This feature contributes to the long life of Eaton 2-Speed Axles.

See your truck dealer for complete information.

EATON *2-Speed Truck* AXLES

POWER WHEN YOU NEED IT—SPEED WHEN YOU WANT IT

EATON MANUFACTURING COMPANY

Axle Division

CLEVELAND, OHIO

FACTORY TRUCK
54600

Handy for many general moving jobs as "stock" truck . . . carrying parts from machine to machine in the course of manufacture. Three lengthwise bolsters assure ample platform support; strong construction throughout. Stakes are removable to add to its general handiness.

PLATFORM OR WAGON TRUCK
01433

Designed specifically for quicker handling of sheet plates in mills but proved very useful for carrying other large, bulky loads. Rugged construction throughout to withstand heavy loads . . heavy iron strap, set flush, binds platform all around. Wheels extra wide for greater stability.

LIFT JACK PLATFORM TRUCK
500

Lifts and rolls easily . . . ideal for handling heavy loads in small spaces. Eliminates many handling processes. Powerful jack operates by merely pulling handle down. To remove jack, handle lifts up and jack rolls out. No pins, ratchets or levers to operate.

8 WAYS to Save Time and Lower Operating Costs

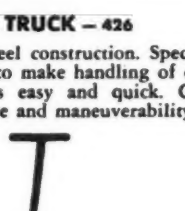
Receiving . . . production . . . shipping — no matter which of your departments has *slow spots*, it all adds to the cost of the finished job. Where load-handling is bogging things down, put in the right type of Fairbanks Truck for your purpose — each is specifically designed to put speed into tough handling jobs. Check the features of these eight trucks and if you don't see the one to help you, write for Catalog 50 in which over 200 various types are described and illustrated. The Fairbanks Company, 393 Lafayette St., New York 3, N. Y.; Boston, Mass.; Pittsburgh, Pa.; and Houston, Texas.

COMMANDER STEEL FRAME PLATFORM TRUCK — S2742A

Here's a Tilting or Center Balance Truck that's a real time-saver. Designed for quick turning in congested areas, around corners, narrow aisles. Turns in its own length . . . pushes from either end. Strong construction throughout. Available with Plain or Roller Bearing Semi-Steel Wheels or Roller Bearing Rubber Tired Wheels.

BARREL TRUCK — 426

All steel construction. Specially built to make handling of open barrels easy and quick. Good balance and maneuverability.



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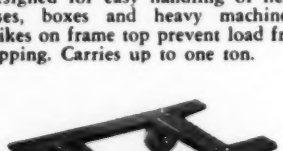
CASE TRUCK — L1191

Malleable iron construction. Light in weight yet practically indestructible. Designed for easy handling of heavy cases, boxes and heavy machinery. Spikes on frame top prevent load from slipping. Carries up to one ton.



COTTON TRUCK — 9213

Ideal for handling bales. Designed for the cotton industry but its features make it readily adaptable for easier handling of other large, bulky objects. Full-length steel strapping — front and back — on selected hardwood handles for extra strength and service.

FEED TRUCK — 9310

Designed for speedy handling of feed bags but just as handy for moving cases and bales, such as hay, etc. Also proved efficient for handling plumbing and heating supplies. Extra long nose for easier load pick-up . . . steam bent handles.

AIR TRANSPORT PROBLEMS

A discussion of the major problems affecting the present and future status of air transportation in this country.

By VICE ADM. EMORY S. LAND
President
Air Transport Assn. of America

IN THESE remarks I shall deviate from normal procedure and attempt to outline in question and answer form some of the things we are all thinking about. The first question is really basic.

1. *What does the air transport industry offer to the public?*

The usual answer is "speed." My answer is "time." It is my belief that the saving of time is the greatest peacetime asset we have to offer. Travel across the continent is less than 12 hours by air. Mail is delivered between the most distant points of the nation in 12 to 18 hours. Shippers take advantage of the lessened time of nationwide distribution brought about by the linking of 2,500 communities with interlocking air and surface transport. From an emergency point of view, the air transport industry is an auxiliary to the armed services in much the same way as the Merchant Marine—each of them offering its own kind of mobility that adds to a complete defense.

2. *What are the difficulties in financing the airlines?*

Address at summer meeting of the Society for Automotive Engineers.

After the war, in the fall of 1945 and in 1946, the airlines undertook a tremendous expansion program. It was inaugurated because:

1. Demand for airline passenger transportation in 1946 was at a rate which brought three times as many passengers to the airlines as in 1941.
2. Domestic routes, shortened during the war, were restored and extended. International routes were reconverted from military control to private operation. New planes were needed for both.
3. Larger, more comfortable transport planes were on the drawing boards; planes designed to fly faster, in higher altitudes, and to provide more nonstop services between the larger cities.

These planes were at the planning stage in 1944. One type was then estimated to cost five and one-half times the cost of a new prewar DC-3. When the first of these planes was delivered in 1946, instead of a cost estimated in 1944 at $550,000, there was a price tag reading $800,000. In other words, the new plane would carry less than three times the number of passengers as the DC-s, but would cost eight times the 1940 SC-3 price. And one of our larger companies has estimated that the cost of training, of disruption to operations and maintenance, and of other expenditures required for the introduction of a new type of plane amounted to eight million dollars in 1946, in addition to the costs for equipment and spare parts. This is in an industry where engineers are fond of saying that a plane type is obsolete as soon as it goes into service. The hard fact remains that airplanes are depreciated generally on a four-to seven-year basis. Contrast that with a Pullman car, which has a life expectancy of 27 years.

Pilots' salaries in some cases went up as high as $12,000 a year. Fuel prices increased, and other direct costs rose sharply. Direct flying costs for one of the newer planes on a large airline rose from 67c. per plane mile in 1944 to 87c. two years later. Everything cost so much more in 1946 that the financing programs the

(*Continued on Page* 49)

CAB and AIRCARGO COMPETITION

What will be the effect of the CAB minimum rate ruling which became effective July 1? Dr. Frederick discusses, pro and con, the possible consequences which may ensue from the important order which was passed despite vigorous airline objection.

By JOHN H. FREDERICK *Aircargo Consultant*

DESPITE vigorous objections from the airlines, the Civil Aeronautics Board stuck by its minimum rate order of last April and made such rates effective as of last July 1. In the coming months, therefore, the lowest rate level legally attainable will be just under 13c. per ton-mile. This does not necessarily mean that there will be any restriction in total air cargo movement, if one can base such a conclusion on a comparison of this rate level with that for the period of July through Sept. 1947. It may, however, have some effect on individual carriers or types of carriers.

The effect on individual cargo carriers, or on the all-cargo carrier vs. the combination carrier, depends somewhat on the overall volume of cargo available. The minimum rate order of the CAB, in effect, necessitates higher rates on large shipments moving for long distances and allows existing rates for smaller shipments moving shorter distances to remain approximately the same.

It will be interesting to see what effect the higher rates will have on the total amount of bulk cargo available for shipment. Between July and September 1947, both airlines and all-cargo operators were complaining that, under the

(*Continued on Page* 76)

Cut down on "hidden transportation costs"

Look *behind* the tariff... ship via AMERICAN AIRLINES AIRFREIGHT

Dig down under the basic cost of surface transportation and you'll find a multiplicity of "hidden transportation costs" that inflate your shipping expense and add to the cost of distribution. Consider, for example, the capital that's "frozen" on slow, long-haul shipments; you can free that capital for quick turnover by using swift-moving Airfreight. Think of the losses through spoilage and obsolescence that can be averted by using Airfreight. Figure out for yourself how much you can save on warehousing requirements. Think of the mark-downs you'll avoid if you keep inventories small and make replacements of stock by Airfreight.

NEW PROFIT OPPORTUNITIES

And on the *positive* side, take into consideration the new profits made possible when Airfreight gets your merchandise to market at the most favorable time. You'll get top prices for air-shipped products . . . you'll be able to establish new and more lucrative merchandising policies . . . you'll be in a position to exploit new and enlarged markets—when you employ American's Airfreight on a day-in, day-out basis.

IT'S ECONOMICAL, TOO

American's Airfreight rates for bulk shipments are surprisingly low—and when you *look behind the tariff* you'll find that Airfreight is *more economical* in many cases, than slower, surface transportation.

Find out for yourself how Airfreight can work for *you*. Call your nearest American Airlines office or write to American Airlines, Inc., Cargo Division, 100 East 42nd Street, New York 17, N. Y.

AMERICAN AIRLINES Airfreight

The Train's Late Again

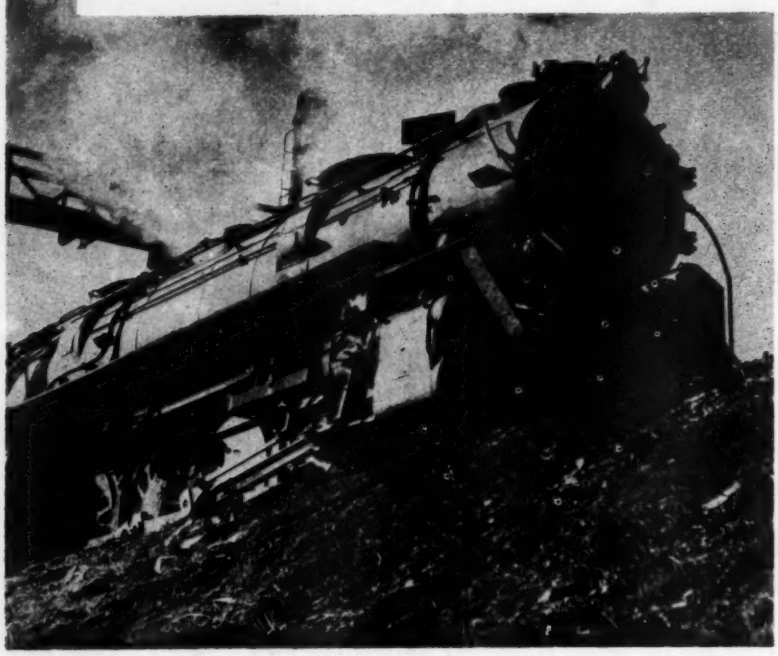


Photo Missouri-Pacific Lines

Jack McCormack, free lance traffic manager, "puts the finger" on some basic causes of delayed l.c.l. rail shipments.

By HENRY G. ELWELL

Traffic Consultant

"WHAT'S wrong with the railroads' freight service?" stormed Charles Knowles, president of the French Textile Co., as he indignantly paced back and forth in his office. "It's taking three to four weeks for our less than carload shipments to reach consignees. Yet the distances are under 300 miles. The customers are blaming us for the delays caused by the unsatisfactory service being furnished by the railroads. Look at this batch of complaints."

Knowles paused in his pacing and handed seven letters to Jack McCormack, free lance traffic manager, who was seated in front of the president's desk. He glanced through the communications, which reported the non-arrival of long over-due consignments. As he was about to reply to Knowles' angry remarks, John Hankins, production manager of the company, spoke up: "Chief, it's more than our less than carloads. We are also experiencing serious tardiness in the delivery of our carloads to our customers. Furthermore, inbound materials shipped to us are not being moved through promptly by the railroads."

Knowles, thumping the desk with his fist, demanded of Jack: "Why in thunder doesn't the traffic department do something? Every day I've been getting kicks from the sales manager, the purchasing agent, and the production manager. Now the treasurer is beginning to fret."

"I'm fully aware of those daily accusations," McCormack replied bitterly, "and I'm as disgusted as you are. My department is spending most of its daily activities trying to locate shipments which have been detained while being transported by rail. For instance, I have here a record of a carload despatched to us eleven days ago. Notwithstanding that it's from an origin located not more than 150 miles from our plant, we haven't received the goods. Here's another covering a less than carload purchase forwarded to us from a point only 35 miles from here. It was shipped seven days ago and is still to be delivered. We requested truck movement, but through an error the shipper forwarded it by rail."

While Jack was speaking, Walter Tripp, the company treasurer, came in. As Jack concluded, Tripp inquiried: "Are other shippers' consignees having similar trouble, or are we the exception?"

McCormack smiled wearily: "Walter, if this company were the only one which had occasion for complaint, I'd resign on the grounds of being incompetent. But the situation is general. At traffic club meetings, at sessions of the Shippers Advisory Boards, wherever shippers gather, one hears a great deal of grumbling

(*Continued on Page* 64)

(Author's Note: Names of persons and companies are fictitious)

Only Dodge Builds "Job-Rated" Trucks

"Job-Rated" TO SAVE MONEY . . .

You'll save money with a truck that's built *to fit* your job. Any truck that's too big for its job, will waste gas and oil. Or, if it's too small it won't stand up . . . maintenance costs will be excessive. There's no need to drive expensive "misfits." Just see your Dodge dealer. Tell him what you haul . . . the weight of your loads . . . and your hauling conditions. He will recommend the right "*Job-Rated*" truck for your job.

"Job-Rated" TO SAVE TIME . . .

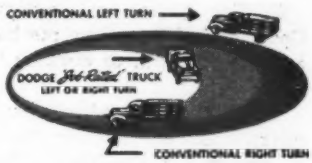
Dodge "*Job-Rated*" trucks save valuable time, too, simply by keeping out of the repair shop. They save time, because each truck is engineered with exactly the *right* one of 7 *different* truck engines. Each one has exactly the right clutch, transmission, rear axle and gear ratio to haul a specific load, over specific roads, with time- and money-saving efficiency.

"Job-Rated" TO LAST LONGER . . .

Naturally, a truck that fits the job . . . a truck "*Job-Rated*" with exactly the *right* units, from engine to rear axle . . . will *last longer!* This means lower upkeep costs. It also means on-the-job dependability and satisfaction. Ask your Dodge dealer to show you *why* the *right* "*Job-Rated*" truck can save money, save time, and last longer . . . on *your* hauling job!

You'll profit from these NEW features, too!

New "cross-steering," with shorter wheelbases that accommodate full-size bodies, enable you to turn in *much smaller* circles. You can park, back into alleys or up to loading platforms with much greater ease.



Front axles have been moved back, engines forward. More load is on the front axle . . . giving *much* better weight distribution. With wider tread axles, longer springs, and "Air-O-Ride" seats you get a marvelous new "cushioned ride."

New "Pilot-House" cabs, with nearly 200 square inches more windshield glass area, give tremendously increased vision . . . and safety!

VISIT THE BIG DODGE "JOB-RATED" TRUCK AND EQUIPMENT SHOW
Madison Square Garden, New York City
November 18-21, 1948

For the location of the Dodge dealer in your community, consult the yellow pages of your local telephone directory

DODGE "Job-Rated" TRUCKS

TRAINING FOREMEN IN HANDLING

(*Continued from Page* 27)

men normally shall have nine different sessions.

Session I will consider "What Materials Handling Is." In general, materials handling is defined as "the planned flow of all materials and products from their origin to the consumer." It is further stated that such a program has the following eight objectives: 1. Reduce the cost of handling. 2. Economical use of warehouse and storage space. 3. Increase plant capacity. 4. Reduce inventory. 5. Improve product protection. 6. Improve safety conditions. 7. Improve working conditions. 8. Provide better service to the customer.

For Session II, the general subject is "Basic Principles of Materials Handling." It is emphasized that, to "make a good materials handling program produce substantial savings," the following eleven factors should be developed:

1. Reduce handling to a minimum. Count the number of times some materials are handled in your department and see if that number can be reduced.

2. Use straight line routes. The shortest hauling distance is a straight line between any two points.

3. Use mechanical equipment. Costs will drop when mechanical equipment is put to work on heavy loads.

4. Increase speed of handling operations. By cutting the time necessary for handling, efficiency will go up.

5. Reduce tare weight. Tare weight is the weight carried in addition to the "pay load."

6. Use gravity. Gravity is the cheapest power at our disposal.

7. Increase safety. Mechanized handling and safe storage are bound to reduce accidents.

8. Reduce fatigue. A tired worker is not an efficient worker.

9. Keep 'em rolling. Preventive maintenance will go a long way toward keeping the equipment on the job.

10. Prevent product damage. If the product is damaged, most of the work has been done for nothing.

11. Store efficiently. Additional space can be "made" by stacking stock as high as you safely can.

The theme for Session III is "Harvester's Progress in Materials Handling." In this session there is a review of progress in the development of the general company-wide materials handling program. It is pointed out that in some of the older Harvester plants, with more than one floor and often with many small buildings scattered over large areas, there have been difficult handling problems, as compared with the newer company plants with one-story buildings.

The next point made is that "management has recognized the importance of materials handling and has established a program to make Harvester the leader in this field. Standardization and Company-wide cooperation are fundamentals. Standardization is the selection of the best available methods and their adoption in all plants. It does not mean that present methods will not be changed. As better methods are found, they will be made the standards."

The foremen attending this session are given practical advice on solving their individual handling problems. They are told that the materials handling engineer at their works is responsible for aiding in establishing improved handling methods. In general, the duties of the work materials handling engineer are:

1. Responsibility for the origination, development and installation of new materials handling procedures and the development, selection and operation of materials handling equipment.

2. Cooperation with other staff departments in developing plant layouts involving the handling or storing of materials and incorporating the most efficient methods of materials handling.

3. Consultation with foremen regarding materials handling or storage problems, analysis of such problems and necessary action.

4. Study of new ideas for improved materials handling methods

At this session, there is also an outline of the help available to the different Harvester works through the IHC Material Handling Research Laboratory in Chicago. This laboratory is one of the service departments in the Manufacturing Research Building, which has 220 000 square feet of floor space and some 250 research personnel in all departments. In addition to direct aid on specific questions, the laboratory also investigates long-range problems involving handling methods, and has a continuous going program to coordinate and improve all Harvester handling operations.

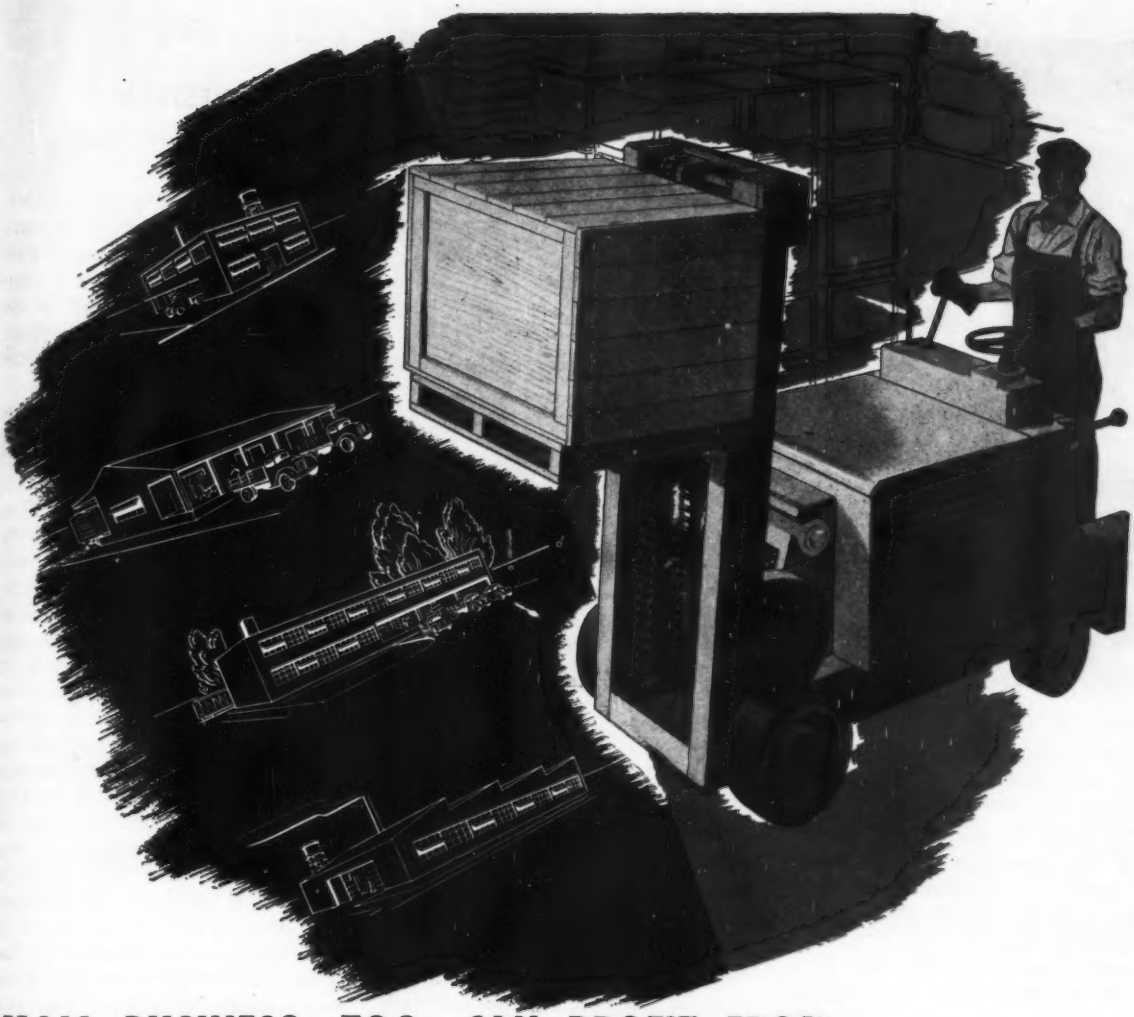
Also, one of the recently adopted important services of Manufacturing Research has been the compilation of a materials handling manual, with detailed descriptions of approved company materials handling methods; and as better company handling methods are devised they are added to the manual. This volume is intended primarily for use by materials handling engineers, but it has sections of special value to operations supervisors and also is available to interested foremen.

The general topic for Session IV is "Materials Handling Equipment." One purpose is to help develop general familiarity with the different kinds of equipment. There is also need to develop standardized descriptive names, to combat a present tendency in some

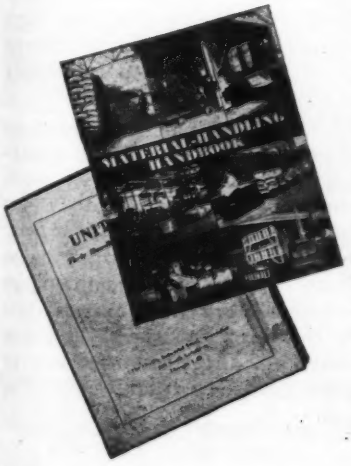
(*Continued on Page* 120)

Underground Warehouse

Plans for Norway's first underground warehouse are now being carried out. Twenty four two-story rooms, 45 by 15 yd. each, will be hewn out of Ekeberg Mountain near Oslo. This will provide nearly 35,000 sq. yd. of storage space. The material removed will be used to construct a 40-yd. wide dock extending the length of the warehouse. Rail and motor transport service will connect with the warehouse and the docks and an electric railway will carry goods to and from storage rooms. Advantages of underground storage are: rust and mold-proof chambers, exclusion of dust and moisture to suit each tenant.



SMALL BUSINESS, TOO, CAN PROFIT FROM *Electric* INDUSTRIAL TRUCKS



POSSIBLY you've supposed that your plant or warehouse lacks the work volume necessary to justify the use of an electric industrial truck. You may, then, be astonished to find, on analysis, that not only have you *more* than enough but that you've already paid for *several* trucks in needless handling expense.

ACTUALLY, a battery-powered truck can make such huge savings in comparison with manual handling that it need not be busy continuously to show a profit. *In many instances, a truck having no more than an hour's work per day can pay for itself in less than a year*—or in about a month and a half if kept busy all day.

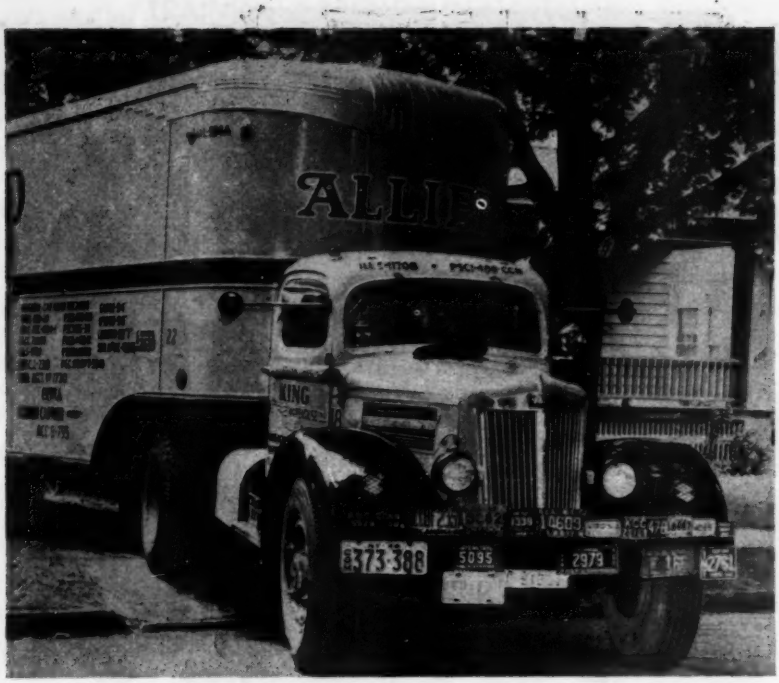
TOO, there is the great versatility of this self-loading truck—its ability to perform moving and tiering operations many of which are beyond the limits of manual handling. For instance, high-stacking to save floor space, manipulating heavy and cumbersome machine parts, die-changing, charging hot furnaces, and countless other examples.

OTHERS in small business have found that an electric industrial truck demonstrates its wide usefulness and rock-bottom operating cost so quickly that the initial "one hour per day" soon grows, as does the production—and profits—of its owner.

YOU will find many suggestions for substantial savings in the MATERIAL HANDLING HANDBOOK and in UNIT LOADS—free on request.

THE ELECTRIC INDUSTRIAL TRUCK ASSOCIATION

29-28D Forty-first Avenue, Queens Plaza, Long Island City 1, N.Y.



Nineteen License Plates

WHEN it comes to highway transportation, the situation is actually scandalous," said Harvey C. Fruehauf, president of Fruehauf Trailer Co. in the August issue of DISTRIBUTION AGE. "Vehicle loads are restricted by law in many states to a point far below the capacity of either the vehicle or the road. Vehicle engineers and manufacturers are not permitted to design and produce equipment which they know would do a better job of hauling our country's products because of inhibiting laws imposed by politicians who have little or no technical knowledge of either vehicles or highways.

"Our highways are fairly uniform throughout the nation. Specifications and materials used by road builders vary but little. Thus, roads have about equal capacity throughout the country, and yet vehicle load and length laws, supposedly based on the capacity of the highways, vary tremendously from one state to the next. "If it were not so tragic, it would be laughable to contemplate the hodge-podge hit-and-miss, apparently devil-may-care mess of vehicle size and weight regulations in the different states. It's time to stop accepting any old vehicle size and weight figures just because they happen to represent a little increase over present state allowances."

These pungent remarks are well illustrated by the picture above, which shows a truck bearing NINETEEN license plates. This is graphic proof of the need for uniformity in state trucking laws and regulations and an end to the "scandalous" conditions alluded to by Mr. Fruehauf.

This brings into focus an involved table of state size and weight restrictions put out by the Truck-Trailer Manufacturers Association, a copy of which can be had upon request to Mr. John B. Hulse, Secretary-Manager states in a letter to TTMA members that "as more and more people become familiar with the maze of regulations which beset the motor carriers, there will be more support for beneficial legislation." It is interesting to note that the table contains hundreds of items referring to individual state restrictions on length, axle load, maximum gross weight and formulae.

WESTERN

(*Continued from Page* 32)

gard to the need for a retarder, and for that reason it appears that the present brakes on five or six axle combinations do a reasonably adequate job insofar as retardation on grades is concerned. As I indicated, the grades are not much steeper than they are in the East, and engine resistance through gears assists in going down grades.

Steering Control Is Important

Mountain roads have many curves, and on shelf roads, one side leads to oblivion. Hence, steering control at all times is of real safety importance. This factor has led to great opposition by truck operators in the mountains to the use of front wheel brakes. Overbraking of the front wheels, resulting in their locking, causes a loss of steering control so that the vehicle continues to travel in the direction in which it was headed at the time that the front wheels first locked. I understand that almost no five and six axle combinations are operated in the Rocky Mountains with the front wheel brakes in action. This is a subject that has kept the industry in controversy for many years with the Interstate Commerce Commission and is a subject upon which we need assistance from the vehicle manufacturers.

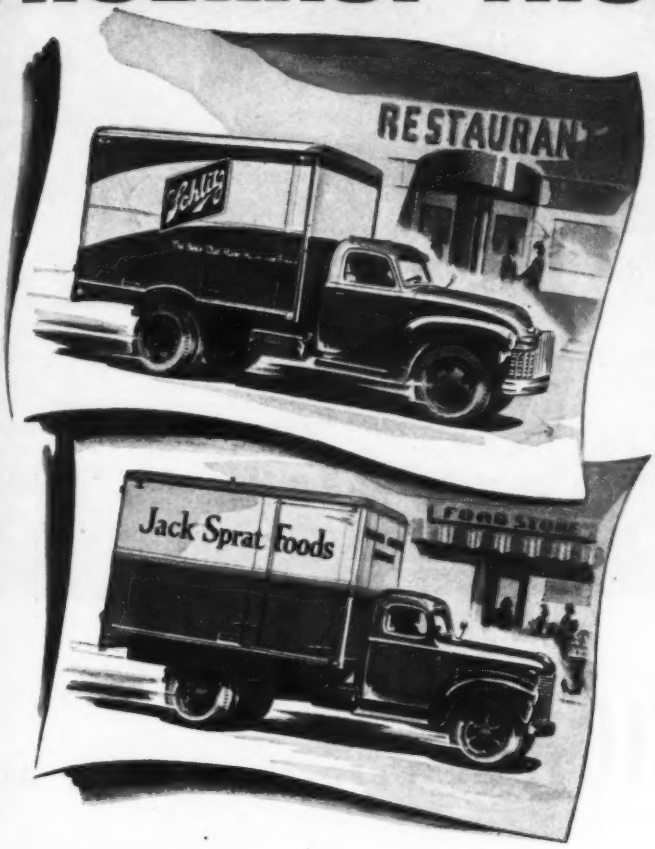
Climatic Variations Are Great

Altitudes and climatic conditions in the Rocky Mountains have a greater range than in the eastern states, and this is too frequently overlooked.

The rain and desert operations encountered in the lower southwestern regions are very tough. Here operation may not be too bad if engine cooling systems are adequate, but dust and grit cause great damage and maintenance costs can be high. Many carriers in this area wash and lubricate their units at the end of every trip in order to keep grit out of moving parts.

(*Continued on Page* 80)

FRUEHAUF TRUCK BODIES



CUSTOM-BUILT QUALITY AT PRODUCTION-LINE PRICES

HERE'S the combination you've been looking for — ***a custom-quality truck body priced on the basis of mass-production costs!***

These all-steel bodies are built to the same standards as Fruehauf Trailers—and incorporate many of the exclusive features of our Trailer design. They are manufactured on the most modern production lines — with the finest of automatic machines.

And you have hundreds of combinations from which to choose, so *your* truck body will exactly fit *your* needs.

Each of our 76 Factory Branches and a like number of authorized Distributors has a complete stock in a wide variety of types and sizes. Select the combination you want—and you'll have the body of your choice in a few hours.

As a first step, write today for our handy "Truck Body Selector." It's yours for the asking and will lead to surprising economies in your truck body costs.

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Insist on a Fruehauf Body when you order a truck!

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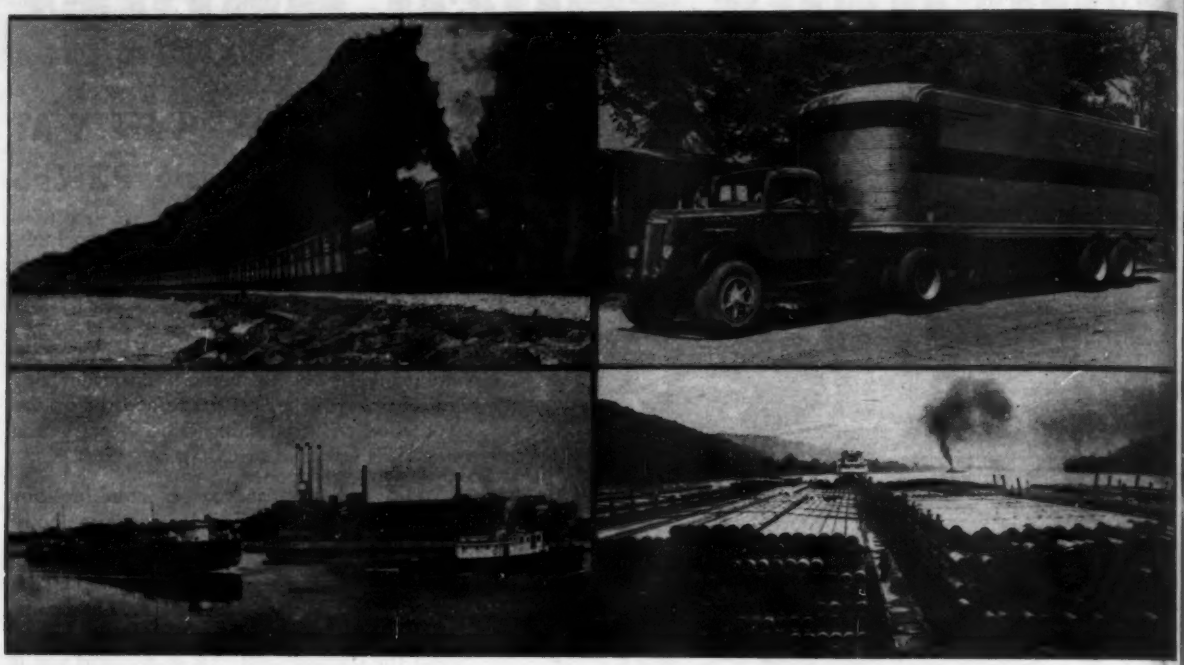


SECTION 5A, ICA OR REED-BULWINKLE ACT

is not to be construed as conferring blanket immunity from prosecution under the anti-trust laws for carrier rate agreements

By G. LLOYD WILSON, *Professor of Transportation and Public Utilities University of Pennsylvania*

ANOTHER step in the long and hard fought battle over the organizations of carriers for making freight and passenger rates and charges was taken on June 17 when Congress passed the Reed-Bulwinkle Bill over President Truman's veto. The Bill became the Reed-Bulwinkle Act, amending the Interstate Commerce Act, amended, by adding a new Section,—Section 5a,—to this much amended Act.[1]

The new Section provides that any carrier subject to the Interstate Commerce Act party to an agreement among carriers relating to rates, fares, or charges; may apply to the Interstate Commerce Commission for approval of the agreement. If the agreement is approved by the Commission after a reasonable opportunity for hearing of objections has been given, the carriers are relieved from the operation of the anti-trust laws with respect to the agreements. Railroads, motor carriers, pipe lines, water carriers, and freight forwarders are thus placed with respect to inter-carrier matters in approximately the same position as are overseas steamship lines whose conference agreements are regulated by the United States Maritime Commission, and United States airlines, the inter-carrier agreements of which are subject to regulation by the Civil Aeronautics Board.

The Reed-Bulwinkle Act includes as carriers eligible to enter such agreements, with the approval of the ICC, the following types of carriers: 1. railroads, express companies, petroleum pipe lines, car operating companies, and all other interstate carriers subject to Part I of the Interstate Commerce Act; 2. all interstate motor carriers of freight and passengers by motor vehicle and brokers, subject to Part II of the Act; 3. all water transportation carriers engaged in interstate domestic commerce in the United States, subject to Part III of the Act, including steamship and barge lines, in the coastwise, intercoastal, Great Lakes, and inland waterway trades; and 4. freight forwarders subject to Part IV of the Act.

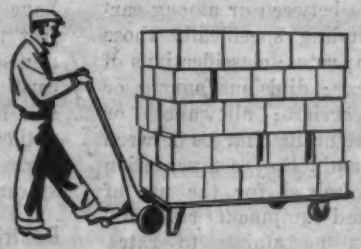
(*Continued on Page* 46)

[1] Public law 662. —80th Congress. Chapter 491. 2nd Session. 1948.

3 ways to cut your costs of warehousing and handling

The Lift Jack
All-steel welded construction
Wheels—Annular Ball-bearing, 8" cushion rubber tires, or semi-steel
Height 41", width 15"
Finish—bright orange

Skids
Wood and steel or all-steel construction
Wheels—8", rubber tire or semi-steel
Sizes from 30" x 54" to 36" x 74"



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2. Put barrels and drums "on end" with the COLSON "Up-Ender." This truck is designed for up-ending heavy barrels and drums with ease and safety.

The "Up-Ender." *
Capacity 750 lbs.
All-steel welded construction
Rubber tired or semi-steel wheels
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The Drum Truck
Sturdy steel tubing
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3. Transport barrels and drums faster and easier with a COLSON Universal Drum Truck. It carries the load evenly balanced over the wheels for safe, speedy handling.

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WHEEL CHAIRS • WHEEL STRETCHERS • INHALATORS • TRAY TRUCKS • DISH TRUCKS • INSTRUMENT TABLES

SECTION 5A, ICA

(*Continued from Page* 44)

The Act applies to any and all agreements between or among carriers, including specifically those relating to: rates; classifications of goods; fares; divisions among or between carriers; allowances or charges, including charges between carriers and the compensation paid or received for the use of facilities and equipment; rules and regulations pertaining to rates, fares, classifications, charges, divisions, or allowances; and procedures for the joint consideration, initiation or establishment of any or all of these matters.

The agreements subject to these regulations include all forms of inter-carrier relationships including conferences, bureaus, committees or similar organizations by whatever name designated.

Procedure in Application

The amended Interstate Commerce Act provides that any carrier party to an agreement with any other carrier with respect to rates or charges may apply to the Interstate Commerce Commission for approval of the agreement. The Act provides that the filing is to be made under rules and regulations prescribed by the Commission. Any action taken by the Commission in approving or denying applications for the approval of carrier traffic agreements, or in terminating or modifying the Commission's approval of such agreements, or in prescribing terms and conditions to be attached to the granting of its approval, is to be construed to effect only the relief of the carriers from the operation of the anti-trust laws with respect to the rate agreements approved by the Commission provided they are made and carried out in conformity with the regulations of the Commission. Stated differently, the Act affords a procedure, subject to Interstate Commerce Commission regulation, which if followed by the carriers, will bring carrier action in rate or traffic agreements under the jurisdiction of the Interstate Commerce Commission rather than to have the actions in the sphere subject to the anti-trust laws as administered by the Department of Justice. It is not to be construed as a blanket immunity from prosecution for acts which may be construed as combinations or conspiracies in restraint of trade.[2]

Restrictions upon Approval Of Agreements

The Interstate Commerce Commission is not granted uninhibited powers to exercise discretion in granting or denying approval of proposed agreements. Not only must the applications of the carriers be made in the manner and form prescribed partly by the Act and in part by the Commission's own regulations, but certain restrictions are imposed upon the Commission's discretion in considering and acting upon the applications.

First, the Commission must find that the proposed agreement will tend to the furtherance of the National Transportation Policy declared by Congress in the Wheeler-Lea Act of 1940, which is now part of the Interstate Commerce Act. Second, the Commission shall grant its approval of the agreements only upon such terms and conditions as it finds and prescribes as necessary to insure that the proposed agreements conform to this standard of public transportation policy.

Third, the Commission may not approve any agreement between and among carriers of different classes,—that is, between railroads and water pipe line, or motor carriers or freight forwarders,—unless it finds that the proposed agreements not only conform to the standards discussed above but that the agreements are limited to matters relating to transportation services performed under joint rates or over through rates. This problem of authorizing agreements between carriers of different types was one of the most controversial aspects of the matter in the discussion before the Senate and House Committees and in the debates in Congress. The opponents of the Reed and Bulwinkle Bills expressed in strong terms their disapproval of permitting inter-carrier agreements generally, and particularly agreements between railroads and motor carriers, water carriers, pipe lines or freight forwarders. For the puposes of administering this provision of the Act, the following five types or classes of carriers are considered respectively as carriers of one class: (1) railroads, express companies, and sleeping car companies; (2) pipe line companies; (3) carriers by motor vehicle; (4) carriers by water; and (5) freight forwarders.[3]

Fourth, the Commission may not approve any inter-carrier agreement which provides for the pooling or division of traffic between or among carriers. These arrangements are subject to other provisions of the Inter-state Commerce Act.[4] Fifth, the right of individual carriers to independent action is specifically preserved by the Act. It is provided that the Interstate Commerce Commission shall not approve any agreement which establishes a procedure for the determination of any matter through joint consideration unless it finds that there is accorded to each party to the agreement the "free and unrestricted right to take independent action." The parties must be free to take this independent action either before or after the matter has been determined by the parties acting in accordance with the procedure provided for by the agreement.[5]

Statutory Procedure

The Reed-Bulwinkle Amendment authorizes the Commission, either upon complaint or on its own initiative without complaint, to investigate any proposed inter-carrier agreement filed with it by the carriers. The Commission, after

(*Continued on Page* 62)

[2] See provisions of Interstate Commerce Act as Amended. Section 5a, (B), Paragraphs 9 and 10.

[3] Section 5a (B), Paragraph 4.

[4] Part I, Section 5.

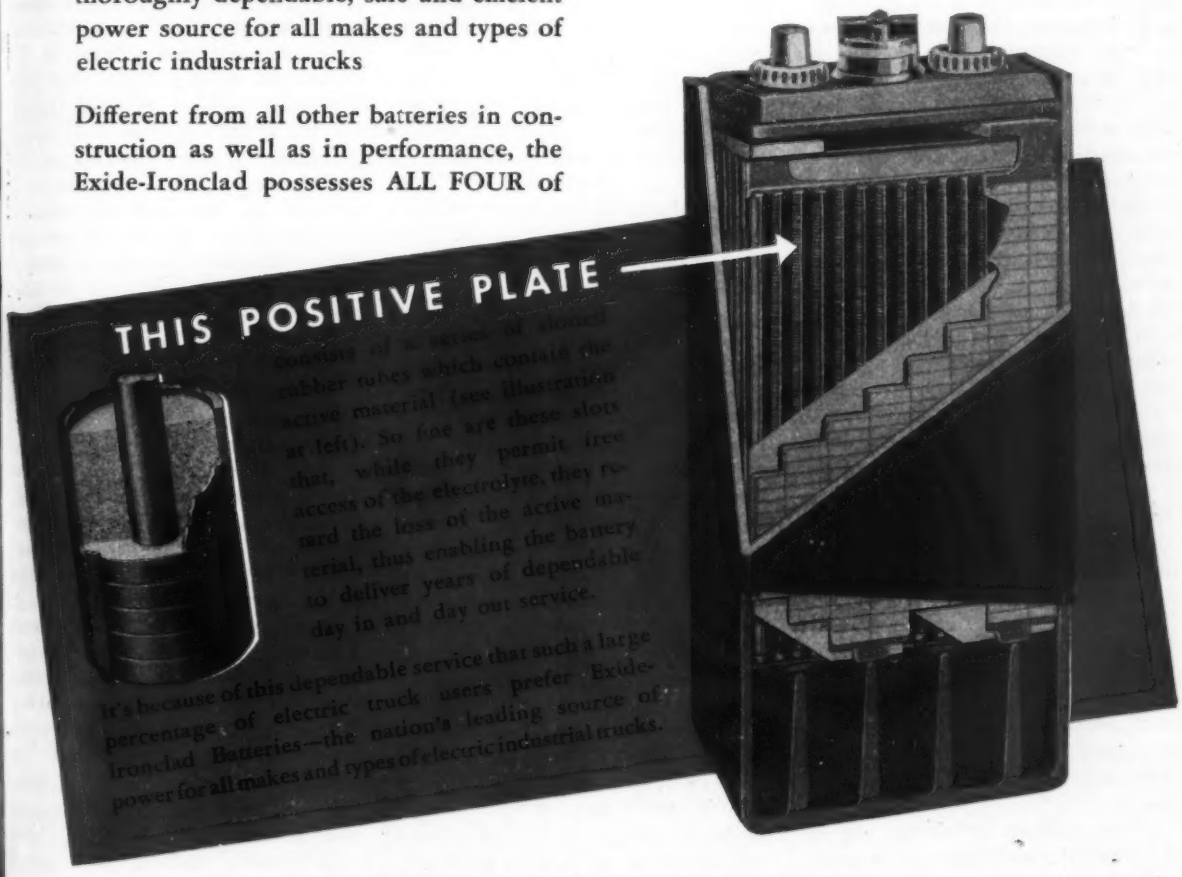
[5] Section 5a, (B), Paragraph 6.

USERS EXPRESS PREFERENCE FOR Exide IRONCLAD BATTERIES

Electric industrial truck users have frequently expressed a preference for Exide-Ironclad Batteries . . . the batteries that assure peak performance day after day.

Such overwhelming preference for the Exide-Ironclad Battery is based upon user experience. This unique battery has, during the past 35 years, proved itself to be a thoroughly dependable, safe and efficient power source for all makes and types of electric industrial trucks

Different from all other batteries in construction as well as in performance, the Exide-Ironclad possesses ALL FOUR of the essential characteristics demanded of a battery for electric industrial truck service—(1) high power ability, (2) high efficiency, (3) great ruggedness, and (4) long life. These characteristics are due to the special construction of the Exide-Ironclad Battery, especially its rugged, tubular positive plate.



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THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto

SMALL BUSINESS PROP

The 17 billion dollar preparedness program now under way is likely to prove more beneficial to small business than ECA since the procurement program will include firms employing less than 500 . . .

By ARNOLD KRUCKMAN

Washington News Analyst

THE National Military Establishment, the new giant unit of Government, a consolidation of armed services, is now actively engaged in spending 17 billion dollars in preparing for all eventualities of national defense. The vast fund was supplied by the recent Congress. During the summer months most of the spending took the form of planning. Now, with the coming of the Fall months the spending has taken the shape of actual orders and disbursements whose quickening effects already are perceptible in the fresh vitality of the national economy. The thought in the Capital has crystalized in the conclusion that the economic stimulation resulting from the circulation of this vast sum will take up the slack that might occur after the ECA-Marshall Plan spending slows down. Incidentally, they think in Washington that the Marshall Plan may have had some significant political effects in Europe, but that it has not been quite so successful in whipping up the circulation of our economic system as was anticipated.

Even without actual war, it is assumed the swelling and expanding activities for national defense will stave off deflation for some time. The next Congress is expected to supply an additional total of something between 12 and 20 billion dollars to be spent by the National Military Establishment and related government agencies. It takes little imagination to perceive that the staggering sum ranging between $30,000,000,000 and 40 billion dollars, must inevitably galvanize into industrial life every remote part of the nation's economy. What it may do to further increase the mushroom thing we call Inflation is another question. This poses a problem that is already engaging the thoughts of economists.

Meanwhile, of most immediate interest to business men is the system which will function to distribute the business flowing from this spending. The National Military Establishment recently estimated that on January 1, 1949, there will be a total of 1,581,000 men in the armed forces. Of this number 41 percent are expected to be in the Army, 27 percent in the Navy, 5 percent in the Marine Corps, and 27 percent in the Air Force. The growth of the armed forces stemming from the peacetime draft, as presently applied, may be deduced from the fact that the National Military Establishment calculates there will be over 200,000 more men in the armed forces on July 1, 1949. The number, as estimated now, is expected to be 1,786,500 including 44 percent in the Army, 26 percent in the Navy, 5 percent in the Marine Corps; and 25 percent in the Air Force. Those figures spell more clothing, more shoes, more food, more housing, more equipment, more munitions, more transportation, more machinery and more workers to produce these materials. You get a glimpse of what it all means when you hear that the armed forces keep on hand, twelve months ahead, at least four pairs of shoes for every member of its organization; and that even at present the armed forces receive directly about 40 percent of the entire domestic output of aluminum and steel, while it is estimated at least another 10 percent must go to the industries indirectly involved.

The policies which govern this vast business operation originate in the Munitions Board of the National Military Establishment. This board is headed by Thomas J. Hargrave, with Stuart W. Cramer as Deputy Chairman and with Gordon Gray, Assistant Secretary of the Army; W. John Kenney, Under Secretary of the Navy; and Arthur S. Barrows, Under Secretary of the Air Force, as active members. It has an activating Executive Committee drawn from the professional members of the armed services. Under the general guidance of the Munitions Board, the actual planning and programming and more detailed crystalization springs from the National Security Resources Board, which is headed by Arthur M. Hill, and includes the Secretaries of State, Treasury, Defense, Interior, Agriculture, Commerce, and Labor.

(*Continued on Page* 60)

Annual Rat Bill $2,000,000,000

Two billion dollars worth of goods are destroyed by rats in the United States every year . . . Distributive activities will benefit from the federal government's National Urban Rat Control Campaign.

THE NATION'S "RAT BILL" Rats destroy some 200 million bushels of stored grains alone in the United States each year, besides ruining many other items in great quantity. Altogether, according to U. S. government figures, rats cost the nation two billion dollars annually. This has a marked effect on business, taking out of circulation each year two billions dollars worth of goods which otherwise might be sold and used. The warehouseman is a big loser, particularly in stored goods which are attractive to rats, grains, cereals, foods of all sorts, etc. All distributive activities suffer, since goods destroyed cannot be transported, handled, stored or packed.

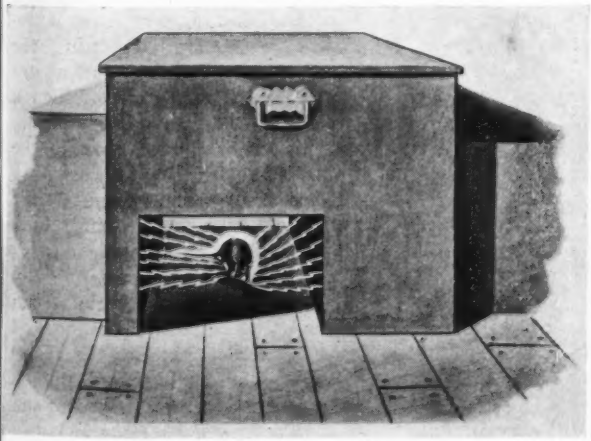
RAT CONTROL CAMPAIGN The U. S. Department of the Interior is conducting a National Urban Rat Control Campaign, an essential part of the President's Emergency Food Conservation Program designed to "reduce materially the annual bill of two billion dollars." Material showing how to kill rats, how to rat-proof buildings and premises, and how to set up a local rat-extermination program, has been sent to state governors and mayors of cities over 10,000 population throughout the country. It is to be hoped that local governments will attack the problem and attempt to lower the appalling annual "rat bill."

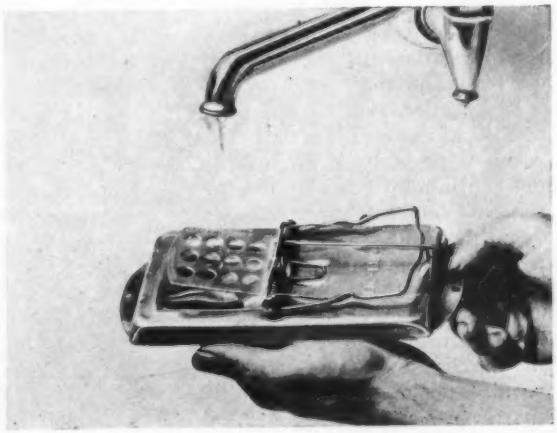
RAT-PROOFING METHODS Basic tenets in any rat-proofing program are these: The exterior of an installation must be constructed of rat-resistant materials; all openings must be closed or protected with screening or shutters; there must be no dead spaces in the interior of the building; there must be no dead spaces beneath floors of barns, houses, corn cribs, etc.; wood, lumber, etc., must be piled high off the ground; garbage cans and incinerators must be tightly closed; in general a neat, clean appearance will discourage rat infestation.

EXTERMINATION BY POISONING Some effective poisons are red squill, ANTU, zinc phosphide, Compound 1080 and thallium sulphate. Although the first three are for general use, the last two are recommended for use by qualified pest control users and government technicians only. Poison should be placed in rat travel ways and harborages, not in an open place. Often it is helpful to prebait for rats; that is, to put out untainted food for them in a certain place to get them used to it, before offering them the poisoned bait.

EXTERMINATION BY GASSING This falls into two main categories, fumigation of buildings and gassing of burrows. The former is a special job and should be undertaken only by a qualified expert. The latter is an excellent way of destroying rats. The poison, calcium cyanide or carbon monoxide, should be pumped into the hole.

EXTERMINATION BY TRAPPING Proper placement is important here again. Placing in a natural rat runway is the best device, and often the enlarging of the trigger by placing a broad sheet of cardboard or metal on it makes it that much harder for the rat not to trip the trap. There are many types of rat trap on the market, most of them essentially the same. Two new types are the Lic-Lure trap and the "Radar" rat trap. The Lic-Lure uses the principle of liquid bait, or plain water, to entice the rat to drink. Rats desire water greatly, having been known to gnaw through lead pipe when attracted by the sound of running water. The "Radar" rat trap is a box-like affair that utilizes electrical impulses for its deadly work. As the rat enters an electrically-charged field in the box-like tunnel, the doors close and the rat is electrocuted, his dead body ejected from the trap and the doors opened for the next rat. These are several of the ways that are available for helping to curb rats, which spread many diseases and each year eat or destroy half as much grain as we plan to send to Europe this year.





"ASSEMBLY LINE" F

Circular flow techniques based on a carefully planned sequence of servicing operations are resulting in substantial time and cost savings in fleet maintenance.

By CHESTER A. NELSON

President
Lyon Van Lines, Los Angeles

ALL warehousemen know that movement of material in and out of any warehouse is very closely scheduled. Any truck breakdown naturally upsets this schedule, causing loss of labor time in the warehouse through standby. Moreover, it increases the delivery cost, a component part of a warehouse operation, by the amount of down time on the equipment. There is also the important matter of public relations involved. A truck being repaired on a city street or public highway is bad advertising for any warehouse operation. It gives the impression that the company is unable to meet its schedules. Scheduled pick-up and delivery are extremely important to the customer served by any warehouse operation. It must be maintained in order to continue a good relationship between the company and the customer.

Observation over a great period of time has proved that equipment which is properly maintained and not continually breaking down on the road tends to give the driver, dispatcher and warehouseman more confidence and pride in the efficiency of their loading schedules and deliveries. The very personal nature of the goods involved in warehousing household goods requires good, clean equipment that is presentable in front of the customer's home. Also, it must be equipment that will reach its destination without breakdown, as family plans require that accurate time schedules be met. This is particularly true in view of the present housing situation, since it is often very difficult for a family to secure temporary housing or hotel facilities on short notice. Warehousemen can ill afford breakdown or failure of automotive equipment which will prevent their meeting scheduled deliveries.

Thus, modern methods of warehousing and truck transportation require modern methods of maintenance and service. With this thought in mind, we arranged an "assembly line" layout of buildings on our new five-acre site at Los Angeles. The keynote of our new layout, in operation for about 16 months, is fast maintenance and service, with plenty of elbow room for movement of our big rigs. Architects laid out the buildings on a "production line" basis. This gives us the speed we wanted. They also separated service and maintenance work into several individual buildings, spaced well apart, so that we now have the required "elbow room."

The overall cost of the buildings, including the terminal, land, and equipment, was $300,000. Service buildings and equipment accounted for $105,000 of the total. Buildings are lined up on two sides of a rectangular plot. The approach to the plot gate is a 30 ft. paved driveway. Let's follow a rig down the "assembly line" to get a good idea of the efficient flow of equipment that results from the production line technique.

A unit just off the road enters the gate and drives directly on to a scale, if any weighing is necessary, or continue straight ahead to the wash building, which is approximately 270 ft. beyond the gate. Every vehicle in the fleet, after every trip, must go through the wash station. The building is a 48 x 16 ft. all-metal structure with a concrete platform and a catwalk so that the operator can easily reach the top of any rig. Shampoo and spray pipes, automatically controlled, run the length of the building and assure a thorough cleaning job. When a particularly dirty unit comes through, it is first driven to the right of the building, placed on a hydraulic lift, and given an air pressure and steam cleaning. A portable steamer is used for this work. After the pressure and steam cleaning, the vehicle is run through the regular shampoo and rinse. One man handles the entire work of this station, and puts a tractor and trailer through an

(*Continued on Page* 58)

FLEET MAINTENANCE

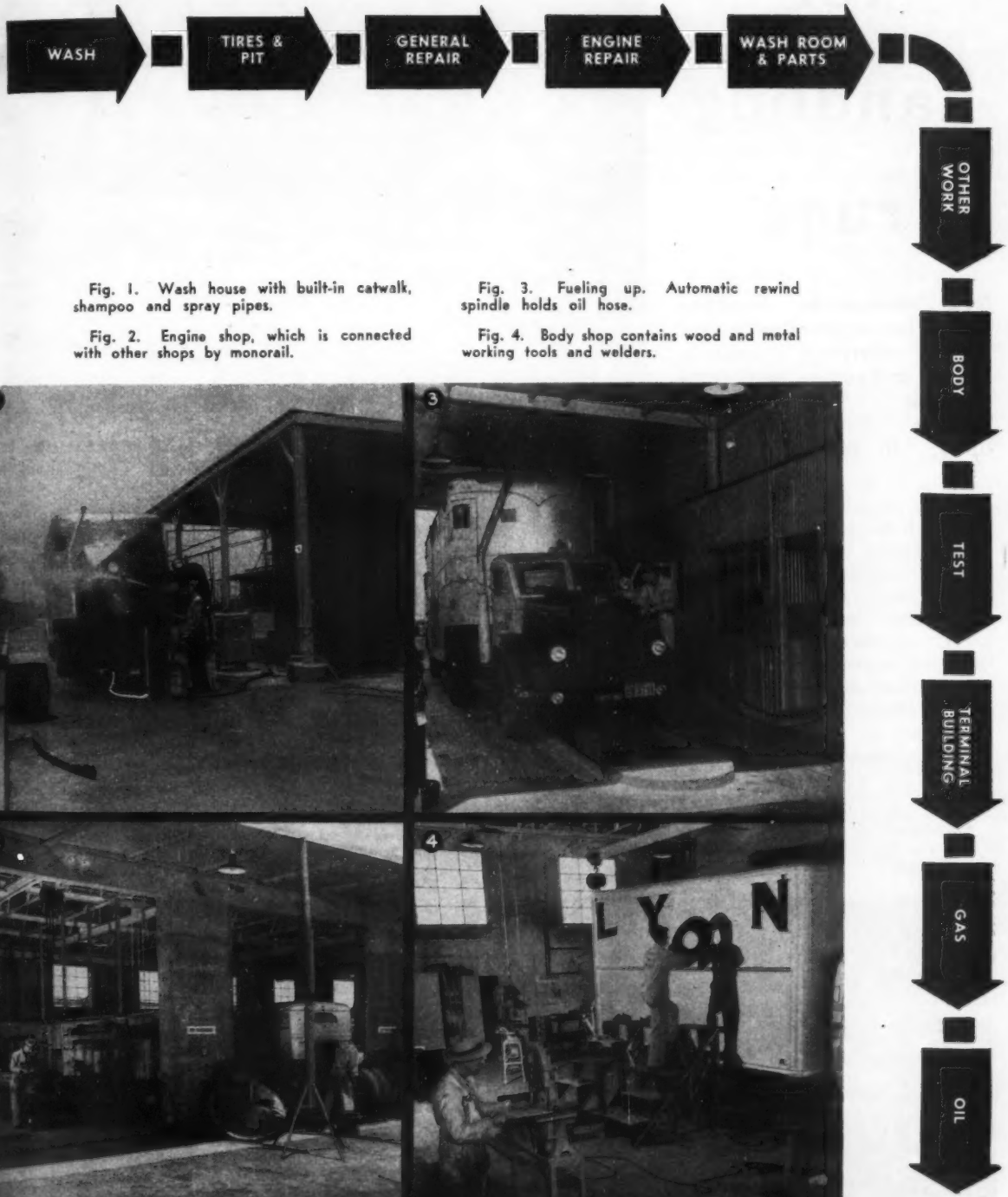


Fig. 1. Wash house with built-in catwalk, shampoo and spray pipes.

Fig. 2. Engine shop, which is connected with other shops by monorail.

Fig. 3. Fueling up. Automatic rewind spindle holds oil hose.

Fig. 4. Body shop contains wood and metal working tools and welders.

"CRADLE SYSTEM" for handling rugs

New mechanized handling system for large rolls of carpet allows receiving, handling, storing and cutting entirely by machine . . . The system, handles full size mill rolls up to 30 inches diameter.

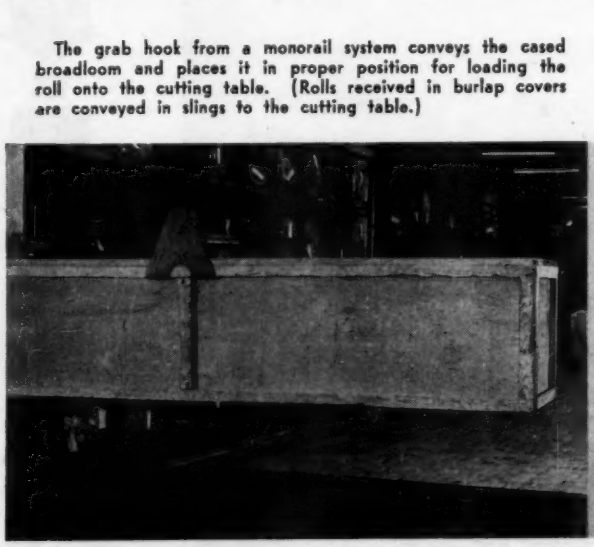
The cutting table, with its loaded cradle, is elevated by the push-button controlled crane, ready to be conveyed to its designated compartment.

A NEW, completely mechanized installation which eliminates the heretofore back-breaking tasks of lifting, storing, handling and cutting of heavy, unwieldy rolls of broadloom and reduces operating costs for retailers and distributors to such an extent that it ushers in a new phase of economics in the carpeting industry, has made its bow in modern business.

Installations of the Cradle System, as it is called, are of various sizes and types to serve the needs of the small retailer as well as the largest. Equipment is ball-bearing throughout. It can be installed independent of the building structure without stopping current carpet workroom operations and deliveries. It is sturdily constructed and employs standard design, both electrically and mechanically.

This revolutionary invention makes the handling of a thousand pound roll of broadloom a one-man operation. It has evolved such all-inclusive efficiency that one man can charge an entire carload of broadloom rolls into the system the same day it is de-

The grab hook from a monorail system conveys the cased broadloom and places it in proper position for loading the roll onto the cutting table. (Rolls received in burlap covers are conveyed in slings to the cutting table.)



Crane conveys cutting table with the cradled roll to designated compartment. The cradled roll is then glided into the compartment. (Note another cutting table on floor in use by cutter in background.

livered. Any roll of broadloom, whether 18, 20 or 30 in. in diameter, or from 9 to 18 ft. in length, is lifted, stored, or moved with equal ease for cutting or matching service.

Here is how the system works:

A roll of broadloom, shipped in a wooden case, enters the receiving department. A grab hook mechanism, suspended from an overhead monorail system, is slipped over the case at its center. The case is then moved along to the cutting floor. Rolls shipped in burlap covers are moved to the cutting floor in the same way in a sling.

Waiting on the cutting floor is a cutting table, which ingeniously serves the system in many ways. The chassis of the cutting table is of steel construction. Inside the cutting table, ready to receive the roll of broadloom, is a cradle, which may be from 9 to 18 ft. long.

The cradle is an independent, moveable unit. The sides of the cradle are made of steel angles, which are mounted on ball-bearing wheels. Suspended from each of these steel sides are wide strips of heavy duck webbing, with spaces between them. The flexibility of this webbing adapts itself to the natural shape of the broadloom roll and creates a cradle. Among other things, the engineering of this cradle provides an even distribution of the weight of the roll and automatically eliminates pile crushing, which in the past has caused costly losses for merchandisers of broadloom.

The crated roll is brought parallel to the cutting table. Two metal arms, which are independent of the cutting table, each have one terminal resting on the edge of the cutting table. The crate is lowered onto these metal arms and the top lid is removed from the crate.

Running alongside the cutting floor are tiers of steel storage compartments. An overhead traveling crane with ball-bearing wheels rides above the top of the steel framework of which the compartments are built. The crane has four-point suspension and its movements up, down and sideways are minutely controlled through an electrical push button system.

This traveling crane is brought into position over the opened crate and lowered part way. Two canvas straps, hooked onto the outer terminals of the metal arms upon which the crate is resting, are now hooked to the crane. As the crane is moved upward, the metal arms tilt the opened crate onto its side and the roll of broadloom rolls gently into its cradle, in which it will remain until sold.

In the case of broadloom shipped in burlap skin, such a roll is deposited directly into the cradle from the receiving dock in the slings provided at the point of its receipt. Both crated or wrapped rolls of broadloom go into their cradles without being lifted by human hands.

Once the roll of broadloom is deposited in its cradle, the crane is lowered, and two steel lifting bars straddle the cutting table on either side. The bottoms of the lifting bars are provided with slots. A sliding catch bar on either side of the cutting table, which is operated by a single control, fits into these slots, anchoring the cutting table frame to the crane. This converts the cutting table into a carrying agent for the roll of broadloom in the cradle.

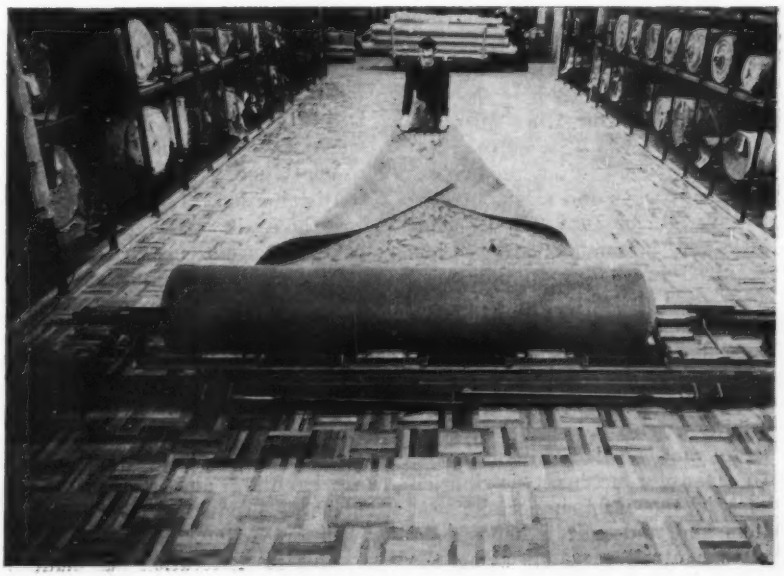
The cutting table, with its loaded table, is elevated by the push-button controlled crane. It is moved over and up to the steel compartment in which the roll of broadloom is to be stored.

Each compartment has steel channels which serve as tracks on either side of its bottom. The trackage provided inside the cutting table comes into line with the trackage in the compartment and the ball-bearing cradle of broadloom glides into the storage space provided for it.

Since the overhead traveling crane carries its burden of broadloom many feet above the heads of any person standing on the cutting room floor, receiving, storing and handling does not interfere with any cutting or other operations which may be taking place on the cutting floor at the time. As many cutting tables as desired may be in use simultaneously for different purposes in the Cradle System, which can provide capacity for from 100 to 1,000 or more rolls of broadloom. One crane can serve any number of cutting tables.

Users of the Cradle System credit it with revolutionizing the business of retailing broadloom floor coverings.

Cutting table on floor with its rollers in "up" position, automatically releases the roll of broadloom from its cushioned cradle, permitting the desired yardage to be unrolled without effort.



Cracking the

Costs which should be segregated for analysis and control are too often lumped with other distribution costs, or charged up to production.

By FRED MERISH *Cost Analyst*

THE late Henry Ford once said that success comes with greater certainty and with more abundance to those who visualize all the factors in a given case. Coming from an automobile man, this is good horse sense and it is a concept that guides successful enterprise in America. Management, if it is efficient, budgets its operations, looks ahead in the attempt to anticipate all internal and external conditions and contingencies that may affect profits, and it keeps a sharp eye on operating results, making adjustments where desirable.

Management can do this on production since processing is well standardized. But when management enters the area of distribution, there is much muddled thinking about ways and means of controling it because management lacks the "know how" that it has acquired in the production zone. There are three basic reasons for this: Management lacks "experience figures" to use as yardsticks of performance; there is a hazy conception as to how to cost distribution; and it is still uncertain as to what is or is not distribution. In many concerns, distribution cost is the most important cost item and, unless it is kept under close control, costs all along the line will be inflated, including those in the production zone. This is an important reason why management should make a better attempt to control distribution cost.

To clarify the picture, we shall discuss questions that management has found difficult to answer and which involve the main problems that cause confusion in the control of distribution cost. *Where does physical distribution start?* Management often thinks of physical distribution as starting at finished production. This is not so and is, moreover, impractical from the costing standpoint. Where attempts have been made to cost distribution after finished production, it has involved so much paper work that it frequently has been discontinued.

Distribution, for purposes of cost analysis, starts the moment raw materials are received in stores, and it continues when materials are requisitioned for production. These are considered as distribution operations assisting production, and bear the same relationship to production that warehousing and transportation bear to marketing. Yet, in most plants, all handling and storage up to finished production are lumped with processing.

This cost allocation has made it difficult to cost distribution properly. The proper way to arrive at handling and storage costs in the production zone is to segregate these costs for purposes of analysis and control. This in turn would reduce accounting costs. Also it becomes easier for management to build up experience figures to use as standards in checking these costs in the production zone against various levels of output to determine whether handling and storage operations are properly coordinated with processing operations. In many plants this coordination is poor but management has no exact means of checking the relationship because it considers plant distribution accounting-wise as an integral part of production. This relationship should be studied, as a dollar-and-cents outlay, by handling unit or as a ratio to output. The costs of finished storage, packing, shipping and transportation should be studied along the same lines, but it should be remembered that these items are not comparable with production costs as presently lumped with distribution costs. Management consequently is without valuable analytical data that would help it coordinate plant distribution and production cost effectively.

Distribution Cost Nut

What is unit costing in distribution? In production, management is accustomed to getting unit cost figures, which tell how much a gallon of paint, a motor, or other designated unit of production, costs to produce. The method can be used on direct handling operations, which are those operations where the products are handled directly by men and equipment. Physical units are used, and these, divided into the costs of operating shipping, packing and other departments, will give the unit cost. These unit costs are studied and compared with the unit costs in other periods to determine whether they are going up or down.

What is unit functional costing in distribution? This is recommended for distribution and its use is increasing, particularly in the marketing zone. The formula stressing separation of functions is more applicable to indirect handling costs, in those service departments that do not actual handle the products but help distribute them. These departments include traffic, purchasing, sales, billing, advertising, accounting. Unit functional costing provides greater precision in distribution cost control, particularly if direct handling operations are segregated. The purpose of breaking down

MANAGEMENT QUIZ

You can benefit from proper cost analysis if you are able to check off the following:

1. **DO YOU KNOW WHAT YOUR DISTRIBUTION COSTS ARE?**
   . . . The unit functional costing system is invaluable in the marketing zone, and especially useful for indirect handling costs.

2. **DO YOU SEGREGATE COSTS PROPERLY?**
   . . . Many distribution costs which should be segregated for analysis and control are lumped under other costs.

3. **DO YOU SEPARATE PRODUCTION AND DISTRIBUTION COSTS?**
   . . . Handling, storage and other costs frequently are masked by processing costs . . . proper cost categories must be set up.

4. **DO YOU PRECOST?**
   . . Various procedures have been set up for determining changes and trends in distribution costs . . . Are you making use of them in cost projections?

operations to functions is to determine the cost of each function in order to develop standard functional costs for distribution control purposes. Where direct and indirect handling costs are lumped, there is no way to find out where to put the blame.

Unit functional costing separates direct and indirect handling costs and provides a breakdown of the latter. The formula follows this pattern:

Function	*Unit*
Invoicing	Item
Posting charges	Shipment
Calculating commissions	Shipment
Extending credit	Order
Salesmen's calls on prospects	Call
Letter writing	Letter
Advertising	Inquiry
Collections	Account
Traffic routine	Shipment

If 400,000 items are invoiced at a cost of $1,600, the unit functional cost for invoicing is .004c. This figure, like others similarly derived, is followed from period to period and kept down to a minimum. Some accountants advocate unit functional costing on direct handling operations. On warehousing, for example, the functions may be handling stock, storing stock, filling orders, or invoicing.

Distribution Costing

Can distribution be costed on a man-hour basis? This contention is untenable. In production, the cost per man-hour is workable because production costs are all-inclusive whereas distribution costs are padded with many costs that are not distribution costs. In other words, both production and distribution costs as handled today consist of heterogeneous elements. The common fallacy is to consider the spread between producer's selling price and consumer's buying price as distribution cost. Assume that the producer sells merchandise for $600 that the consumer eventually buys for $1,000 and that it takes 400 man-hours to distribute this merchandise to the consumer. If the spread ($400) were all distribution cost, the man-hour cost to distribute the goods would be $1. But assume that minimum-price acts, tariffs, patents, etc., are responsible for $200 in the spread, then the distribution cost per man-hour would be 50 cents. Under no costing formula is it possible to screen this "excess baggage," hence there is no way to arrive at accurate man-hour costs for distribution. Management that tries to use the man-hour cost to appraise distribution efficiency will be badly misled because there is no feasible way to cost the non-distribution expenses that inflate the spread between the producer's selling price and the consumer's buying price.

Distribution Control

What is the biggest difficulty encountered when costing distribution? Contrasted with production, the agencies employed in distribution are many and varied. A concern making oil burners will machine its castings much as other oil burner manufacturers do. In the distribution of the product, however, a concern may use 25 different agencies and combination of agencies, all with different operating techniques. It may sell through mail-order houses, house-to-house canvassers, through its own distributors, retailers, branches, agents, jobbers, department stores only, etc. It may shift from one to the other quickly and often. A concern selling oil burners cannot very easily shift to the manufacture of lotions or even change its methods of production on burners, but it can quickly change its method of distribution.

HELP WANTED

Warehouse Superintendent: Large midwestern manufacturer wants experienced man to superintend operations of Warehouse and Receiving and Stores for plant shipping volume of five million dollars finished goods per month. State age, experience, qualifications and salary desired in letter of application. Address

Box D-434, DISTRIBUTION AGE
100 East 42nd St., New York 17, N. Y.

In short, production procedure is fairly stable, more so than distribution, which makes the latter harder to analyze. That is why distribution control is such a problem child and why management should devote time to the subject.

If better distribution control cuts costs, will pricing reflect this? Economists argue that cutting the cost of distribution reduces prices. We doubt it. Lower prices to the consumer result from keener competition, higher output and improved technology. Savings in physical distribution and marketing costs usually go to the producer. This has been true from the days of the buggy to the era of air travel. The reason is that distribution cost savings are relatively so small per unit that they would have no appreciable effect on buying power compared with production cost savings. The way to sell for less to the consumer is to produce more.

Television is a good example here. It is now undergoing drastic price reductions and prices will go lower, yet distribution costs in this field, like other business costs, have been increasing. The consumer can buy a television set today for less than he could one year ago because better production methods have been developed, sets can be turned out faster, more stations are on the air, demand is increasing and consumers are buying more, competition is getting keener, and the cost of producing a television set has come down.

Despite the secondary importance of distribution costs, there are many opportunities to effect important savings by better control of distribution cost. The management making such savings will usually pocket them or use the money to do a better production job so that the consumer can buy for less. On the other hand, he may find that, retroactively, better distribution control cuts production cost by selling more goods so that the consumer can buy for less. The production and distribution operations in an organization are two parts of the same machine. Both parts must be coordinated to maximize profits.

Motaircargo

(*Continued from Page* 19)

for which the new rates provide. Only one through standard shipping document will be required for the acceptance or delivery of shipments, although the airlines' standard Airbill or the motor carriers' standard Bill of Lading will be exchanged by them at the point of actual interchange. Arrangements are under way to provide the same type of service in other areas. Chester T. Moore, chairman, Central States Motor Freight Bureau, recently said that "truck transportation is the connecting link between air transport of property and the customers served and it is a pleasure to note the disposition of the people in air transportation to give full credit to the function of the motor truck in their full service performance. Our carriers are pleased to be able to effect this initial step in the development of an over-all nationwide pattern." As a matter of fact, the airlines by themselves or through Air Cargo, Inc. never did want to get into the trucking business. Some in the industry said that it would never be possible to enter into joint arrangements with hundreds of local trucking concerns. The progress made so far seems to disprove such a contention. It now remains to be seen how interline interchange and other operating procedures can be simplified and standardized. Tracing, accounting and aircraft space control are still problems that need much going over before they are satisfactorily solved.

3. Air Cargo, Inc. has filed with the Civil Aeronautics Board a revised pick-up and delivery tariff listing rates for this service for all certificated airline route cities by rate groups. This is a big improvement as previously pick-up and delivery tariffs have been a "hodge-podge," with almost as many tariffs as there were cities. There are now 21 rate groups, with a single rate applying to as many as 20 or 30 cities.

Expansion and simplification—motaircargo has arrived!

Only AIR EXPRESS gives you all these advantages

A combination you don't get with other air-shipping methods

1. Special pick-up and delivery *at no extra cost.* Your shipments are picked up promptly when you call; fast delivery to consignee's door.

2. *You get a receipt for every shipment,* and delivery is proved by signature of consignee. One-carrier responsibility. Complete security.

3. Assured protection, too—valuation coverage up to $50 without extra charge; 10 cents for each additional $100 or fraction thereof.

These advantages, plus 21 others, make Air Express the best and fastest way to ship. Your shipments go on every flight of the Scheduled Airlines—repair parts, equipment, finished items *keep moving* to where they're needed. Reach any U.S. point in hours. Phone local Air Express Division, Railway Express Agency, for fast shipping action. Specify "Air Express" on orders for quickest delivery.

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22 lbs. machine parts goes 700 miles for $4.73.
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Same day delivery in all these cases if you *ship early.*

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ASSEMBLY LINE MAINTENANCE

(*Continued from Page* 50)

average cleaning job in about 25 minutes.

The cleaned vehicle's next stop is a hundred feet ahead at the grease and tire building. A tire man meets the rig at the entrance, performs his inspection, and drives the rig into the building, over the grease pit. The 54 x 29 ft. building is also of all-metal construction and on a concrete base. One man takes care of the entire greasing procedure, and also changes filter elements and checks battery water. Lube oil is served from three 550-gallon underground tanks. Automatic dispensing hose are all on automatic rewind spindles. Every dispenser is carefully metered so that a close record can be kept of the lubrication cost on each vehicle. Three electric pumps control the flow of oil from the underground tanks. These pumps, along with two compressors for the gear grease and the high pressure lubrication dispensers in the pit, are located inside the grease building. The two compressors are run alternately, so that there is always a spare on hand in case of an emergency.

The grease pit extends almost the entire length of this 54-ft. building. Four automatic rewind spindles for gear grease and high pressure lubrication oil are recessed into the pit walls. Grease and oil are pumped from standard drums by the air pumps installed in the building. Drained oil is channeled from the pit to an underground sump. The tire section of the grease building is 35 x 13½ ft. and has racks along one entire wall, and half of the wall facing it. The remainder of the space is equipped with a brander, hot plate, work bench, and desk for the tire expert. Ample space is available.

As our truck has progressed along the "assembly line," notations on the condition of the vehicle have accumulated on a report form kept in the cab of the unit. The man at each station is charged with the responsibility of watching for, and recording on the form, any mechanical deficiencies.

The vehicle is run from the grease building across the yard to the garage building, and the notations on the form in the cab determine which department will receive the unit. An all-concrete structure, 133 x 45 ft., the garage is divided into the following sections: body shop; parts department and toilet and locker facilities; engine repair room; electrical department; and general mechanical repair shop. The body shop, employe washroom facilities, engine room and general mechanical repair shop each opens onto the yard, and has an individual entrance. The remaining sections are situated in the back portion of the garage building.

Since we are located in Los Angeles, we have found no need for doors. They can, however, be easily installed if a need for them is evidenced. Open construction of this type also eliminates the necessity for mechanical ventilation equipment. A 10 ft. roof overhang gives all the protection necessary from the elements and also extends the covered working area of the individual shops should there be a "full house" in the garage proper at any time. Atop the overhang is a series of 1500-watt floodlights for night operations.

An important feature of the whole garage arrangement is our over-head rail system. Each shop has at least one rail, with a three-ton capacity hoist, that runs from front to rear of the shop. The individual rails in the general repair shop all connect at the rear of the garage to a single overhead rail travelling the entire length of the repair shop and extending out from the building to the degreaser. Innumerable uses are found for this handling equipment. In effect, any object can be moved on the rail system between any two shops in the garage, thus saving considerable handling time.

A typical time saving operation is in connection with degreasing. The hoist comes into place over the part to be degreased, regardless of which shop it may be in, picks it up, and carries it along the overhead rail to the degreaser located outside the shop. When the degreasing is completed, the rail and hoist quickly return the part to the proper station. Carts, dollies, motor mounts and several handlings were previously necessary for this now simple degreasing procedure, which is a good example of the economies effected by an overhead rail and hoist system.

First station in the garage line is the body shop. Complete metal and woodwork equipment is available, including electric arc and acetylene welders, metal brake, band saw, bench and cut off, planers, shaper and drill presses. Flexibility is a principle of body shop operation so that, as far as practicable, all equipment is mobile. Two portable welders, for instance, can be put to work on the body of a truck undergoing repair in some other section of the garage. The time saving factor is obvious. In addition, each of the three workmen here has his own portable workbench. The body shop also has a frame straightening rack and wall racks for small metal parts. Moldings and steel channel sections are stored in racks on the outside wall of the shop. In the rear of the body department, an air compressor is set up for use in the general shop.

Next station in the garage line is in two parts, an employee locker and toilet section in front, and parts department in rear. The parts department is centrally located, serving the body shop on one side and the engine repair shop on the other. Small, fast moving parts, such as nuts, bolts and air fittings, occupy the bins on the main floor. In addition, there are complete sets of taps, dies and drills ranging from 1/16 to 1 in. A mezzanine holds additional stock, which generally consists of heavier engine parts on which turnover is not so rapid. A full time stockroom man runs his department on an immediate replacement basis.

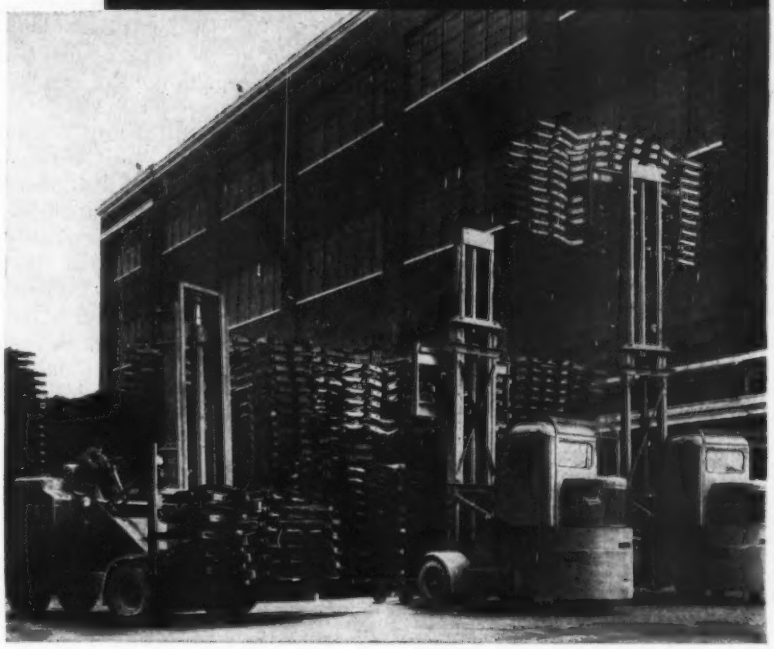
Our tire stock gets very special care. We had a basement storage room built under the parts department expressly for our rubber inventory. The room is cement floored and walled, dark and cool. New tires are cured here for about six months, and then taken up through a floor well as needed. This special tire storage room is the only part of the garage equipped with an overhead sprinkler system.

The next garage station is the engine repair shop behind which are a superintendent's office and an electrical shop. The repair shop is equipped to completely rebuild a motor. Valve facers, lathes and a 60-ton hydraulic press are used in addition to a full complement of motor repair shop tools. Two men do all the motor, transmission and rear end work. A motor change can be accomplished in three to four hours. When a transmission, brown-lipe, clutch or motor unit has been rebuilt, the overhead rail and hoist come into play to lift the part and place it in a storage rack. When a rebuilt component is needed, the hoist again lifts it from the storage rack, and puts it in position for assembly. All completed motors are test run on a portable test block outside the repair shop entrance.

The electrical shop is small but complete. Tune-up, testing and repair equipment and machines are all available for the one electrical expert. In addition to his duties on electrical equipment, he runs the vehicles through the dynamometer test. The general repair shop area is the last station in the garage line. This is the largest section of the garage and has two pits and a centrally located hydraulic lift similar to the one at the wash building. Rapid change is stressed in this department. The two overhead rails are placed so that hoists can service every point in the area. The main floor is kept as free of equipment as possible. The two pits are equipped with drainage facilities to a 1,000 gallon sump tank. Lights in the pit are recessed in the walls and are explosion proof. Six general repair men work in this section.

(*Continued on Page* 78)

ROSS HEAVY DUTY LIFT TRUCKS



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SMALL BUSINESS PROP

(*Continued from Page* 48)

The business of active procurement is divided among several officers of the various departments of the armed services which constitute the National Military Establishment. Brig.-Gen. J. K. Christmas, heads the buying for the Army. In a recent hearing held by George F. Meredith, Executive Director, Senate Small Business Committee, Gen. Christmas illuminatingly discussed the details of his job. He made clear that the Army accepts bids on partial quantities in order to open the lists to smaller business. Those who wish to be fully informed about the details of Army requirements are asked to write Gen. Christmas for a copy of a pamphlet, "Purchased Items and Purchasing Locations". He volunteered the interesting fact that in March and April of this year smaller business, meaning those firms which employe less than 500 persons, were awarded 44 percent of all contracts by dollar volume, and 64 percent by number of contracts. The research and development contracts, which cover the undertakings to determine unproven projects, often go to smaller units, as well as to colleges, universities, and other nonprofit institutions.

Apparently there is in process of development a system by which many things are procured by one agency for the benefit of all. For instance, the Navy buys all coal; and most of the lumber is purchased through the Corps of Engineers. Shoes are apparently procured through the Quartermaster General of the Army for the Air Force as well as for the Army. Purchases are negotiated for the Air Force by Brig.-Gen. A. A. Kessler, Jr., Director, Procurement and Industrial Planning.

Procurement for the Navy comes under the direction of Rear-Admiral James D. Boyle, Office of Naval Material. The Admiral urges that those who wish to secure Navy business should write him for the booklet, "Selling the Navy". The Atomic Energy Commission has a very large buying program which is headed by Walter J. Williams, Director Division of Production. But much of the procurement is negotiated through the five regional offices which are located at New York; Chicago; Richland, Washington; Los Alamos, New Mexico; and Oak Ridge, Tenn. The managers in each of the regional offices have broad authority to make contracts and awards. During the next twelve months the Atomic Energy Commission expects to place approximately 200 development contracts on radiation-detection instruments. Much of the business of the Commission concerns very specialized equipment. Most of the prime contracts must be awarded to large production establishments with competent and highly trained staffs.

The Economic Cooperation Administration, which implements the Marshall Plan, has made very clear that it has nothing directly to do with procurement. Various agencies of our own Government buy supplies such as wheat, hides, leather, fats and oils, and similar commodities, shipped to Europe for the immediate relief of the 16 countries. The actual procurement is conducted by the Department of Agriculture, the Occupation Office of the Army, the Federal Supplies Bureau, and several other agencies. The ECA furnishes the credit or the funds. On the other hand, machinery, turret lathes, and so on, are purchased by the myriad of buyers in the 16 countries who use their own importing agents, or their own Government connections in this country. Apparently the best aid the ECA can supply to those who wish to sell on the ECA account is to distribute information, and to use its moral suasion to see that the orders are given reasonably wide distribution. In order that smaller business may get some of the business, J. J. Kelly, formerly head of the Office of Smaller Business of the Department of Commerce, has been put in ECA to watch and warn concerning the opportunities for smaller business. Those who have general procurement problems which they may think are involved in ECA will get most help by getting in touch with Edward E. Kunze, Deputy Director, Procurement Operations Division, Economic Cooperation Administration, Washington, D. C.

It is interesting to know that the lucky 16 in Europe, up to September 1, 1948, had received from us, through ECA, goods, materials, and services, having a total value of $1,245,798,925. It is worth not-

Obituaries

Harold S. Conklin, 61, auditor of Mack Trucks, Inc., treasurer of the Commonwealth Club of Upper Montclair, and a past master of Mountain Masonic Lodge 214. (Vitkauskas).

Howard L. Distelzweig, 50, terminal manager for the Pittsburgh-Wheeling Truck Service, Inc., a veteran of the trucking industry, and a member of the Columbus Motor Freight Club. (Kline).

Arthur H. Hall, 62, treasurer of the Somerville trucking firm of C. E. Hall & Sons, Inc., and an executive of several other companies. (Vitkauskas).

Nace F. Huber, president of Huber & Huber Motor Express Co., and a director of the Kentucky Motor Truck Club. (Kline).

William Robinson Huey, 69, general traffic manager of the Bemis Brothers Bag Co., one time president of the St. Louis Traffic Club and a member of the Masonic Order.

Raymond E. Palmer, 57, engineer and project manager of the Mexico City Plant, United States Rubber Co., and a member of the American Society of Mechanical Engineers.

George M. Richardson, vice president and director of the Merchants Warehouse Co., Philadelphia. Mr. Richardson was a prominent figure in the warehousing industry having served his company for many years in an executive capacity.

H. J. Siedenburg, president of the Pyramid Motor Freight Corp., and a member of the Traffic Club of New York.

John K. Whitaker, 59, vice president and director of the Commerce and Industry Assn. of New York and president of Neuss and Hesslein & Co., Inc.

ing that the Department of Agriculture was the procuring agency which spent $216,564,004; the Army procured goods and services worth $101,158,546; the Navy, $3,149,015; and the Bureau of Federal Supply bought supplies worth $6,130,796.

The Department of Justice has begun its campaign against antitrust violations by securing an indictment from the Federal Grand Jury at Seattle charging two national freight forwarding concerns with violations of the Sherman Antitrust Act. The firms indicted are the Universal Carloading & Distributing Co., and the National Carloading Co. Both have their main offices in New York. They operate throughout the United States. The violations are charged to have occurred in Washington, Oregon, and California. The indictment alleges they were the dominant corporations in their business in the Pacific Northwest in 1945, and that they balked the competition of the Northwest Consolidators of Seattle, whose business originated in Seattle, Tacoma, Portland, San Francisco and the adjacent areas. The Attorney General personally made the announcement of the prosecution, saying: "It is extremely important that the channels of free competition be kept open, particularly that the freight forwarding field be open to the public and to competition by those who might care to participate in the business."

The Attorney General says that conditions prevalent in many lines of competitive business threaten to increase prices and supress competition by conspiracies to establish and maintain monopolies. To break up this "increasing concentration of economic power" the Department of Justice has placed special anti-monopoly staffs in Boston, New York, Cleveland, Chicago, Denver, Los Angeles, San Francisco, Seattle Philadelphia, Jacksonville and Kansas City. There is every reason to assume that there will be a considerable augmentation of antitrust prosecution in the areas. Citizens everywhere have been asked to aid the regional offices to find violations; and the regional men are now actively engaged in uncovering illegal price-fixing, destruction of competition and other actions which would be in restraint of trade and in violation of the antitrust laws.

All this comes along about the same moment that the FTC issued its rather startling report which declared that integration, consolidation, and monopolization are responsible for the disappearance of 2,450 manufacturers, formerly independent units of the national economy. The firms which were washed out held assets aggregating over $5.2 billion or more than 5 percent of the total assets of all American manufacturing companies. FTC states that in the first quarter of 1948, the largest size class of business showed the highest rate of return, and the smallest the lowest comparative rate of return. The FTC is extremely gloomy about the future of independent business.

The Special Session, expected shortly after the elections in November, is expected to speed up the draft and make more stringent controls over commodities and prices.

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(*Continued from Page* 46)

investigation, may by order terminate or modify its approval of inter-carrier agreements or the terms and conditions attached to its approval. It is directed by the Act to do so if it finds such action necessary, or if it finds modification necessary to assure that the agreements are in conformity with the statutory standards.

No order approving or disapproving agreements among carriers may be made by the Commission without affording interested parties reasonable opportunity to be heard. The effective date of any order of the Interstate Commerce Commission terminating or modifying the approval or the terms and conditions surrounding its approval of any inter-carrier agreement may be postponed by the Commission for such a period of time as the Commission determines to be reasonably necessary to avoid undue hardship created by its order.

Commission's Rules And Regulations

On July 13, 1948, the Interstate Commerce Commission issued a set of rules and regulations governing the applications to be filed by the carriers under Section 5a of the Interstate Commerce Commission for authority either to establish or continue inter-carrier agreements. The Commission has assigned the supervision of matters arising out of the Reed-Bulwinkle Amendment to Division 2 of the Commission consisting of Commissioner Alldredge, Chairman, Commissioner Rogers, and Commissioner Barnard. The Bureau of Water Carriers and Freight Forwarders under Director Charles R. Seal has the responsibility for the administrative work below the Division level under the supervision of Division 2.

The regulations provide, with respect to the form and contents of the applications to be filed by the carriers, that they must: 1. identify the applicant carrier by name and address; 2. identification of the carrier as an individual, partnership, or corporation, 3. the type or class of carrier,—railroad, motor carrier, water carrier, express company, sleeping car company, pipe line, or freight forwarders; 4. a complete description of the inter-carrier organization which administers the agreement, the approval of which is sought, whether a conference, bureau, committee or other type of organization,—including all of its subdivisions or subordinate units; 5. a complete statement of the functions of the organization and its operating methods; 6. a description of the territorial scope of the organization's operations; 7. a description of any working arrangement or relationship which any such organization may have with any other organization, including the nature, scope, and mode of procedure of any other kind of agreement; 8. a statement of the "facts and circumstances" relied upon by the applicant carrier as justifying the agreement as one which is in furtherance of the national transportation policy enunciated in the Interstate Commerce Act; and 9. the identification and address of the carrier's officer, counsel, or other representative administering the agreements for the carrier.[6] All applications are required to be made in the form required by the Commission's General Rules of Practice.

In support of the applications, the carriers are required to file the following exhibits: 1. a true copy of the agreement to which the carrier is a party; 2. a copy of the constitution, by-laws, or other documents evidencing the organization's powers, duties and procedure; 3. an organization chart, if the inter-carrier agreement is one which is operated through a conference, bureau, committee or any other type of organization; 4, a schedule of the charges for or division of the expenses of membership in the organization; and 5. a statement of opinion of counsel for the applicant that the application is in conformity with the provisions of the Act and that the articles of incorporation or association are consistent with the provisions of the law.[7]

Procedure in Filing and Consideration of Applications

The Commission's regulations provide that the applications of the carriers must be made under oath and verified if filed on behalf of an applicant. The application accompanied by twenty copies must be filed with the Secretary of the Interstate Commerce Commission, Mr. W. P. Bartel, and copies must be served by the applicant upon the state regulatory commissions of the states embraced within the territorial scope of each association, conference, or committee. Public notice that application has been made will be issued by the Interstate Commerce Commission and filed with the Director of the *Federal Register*. The Commission's notice will indicate the procedure to be followed in obtaining a hearing on the application before the Commission. Protests against the granting of applications are required to be filed by protestants in the form prescribed in and in the manner provided for in the Commission's *General Rules of Practice*, as are all other matters of procedure not covered by the special rules discussed above.

The filing of applications by the carriers is voluntary to the extent that they must decide whether or not their agreements with other carriers or membership in conferences, traffic associations, rate bureaus or other organizations are within the purview of the statute. The carriers are not given any period of time within which the applications shall be filed. The applications will probably be filed as soon as the carriers decide whether or not, in their judgment, the agreements to which they are parties or the inter-carrier organ-

[6] Interstate Commerce Commission, Rules and Regulations Governing Applications under Section 5a of the Interstate Commerce Act, as amended, for Authority to Establish or Continue Agreements Between or Among Carriers.

[7] Interstate Commerce Commission Rules and Regulations.

izations of which they are members are subject to the Reed-Bulwinkle Amendment and that appropriate applications for the approval of the agreements or of participation in the organizations should be made by them under Section 5a of the Interstate Commerce Act.

The Pros and Cons of Conference Rate-Making

The arguments for and against the making of rates, fares, and charges by the conference or agreement method from the practical point of view and from the standpoint of the law have been so thoroughly discussed in Congressional hearings, in court proceedings and in the trade press in recent years that additional discussion is fruitless excepting to indicate the areas of disagreement within which the Interstate Commerce Commission must function in considering the applications.

The proponents of the conference or bureau method of making rates, fares and charges, including the carriers, many shippers, and many students of transportation and its regulation, argue that this method of rate making is necessary for the consideration and publication of rates or charges in which more than one carrier is concerned. Carriers and shippers have the advantage of knowledge of what is being considered and opportunity is given to support or oppose the rate changes with notice to all parties concerned and according to an established procedure. Carriers and shippers may propose or oppose rate changes and appeal the decisions if they are not satisfied with the result to higher carrier authority. Dissident carriers may take such independent action as they deem necessary or desirable. Shippers or carriers, individually or by groups or associations, may institute complaints or protests to the Interstate Commerce Commission with the rates established either by the carrier conferences or bureaus or by independent action of the carriers.

The opponents of the conference method of rate making,—the most ardent spokesmen of whom are the members of the Anti-Trust Division of the United States Department of Justice,—assert that the conference or agreement method of rate making stultifies free competition among carriers, that it results in delays to the disadvantage of shippers and carriers, that the freedom of action of carriers is restricted, and that the regulation of rates and charges made by the conference method is ineffectual. In opposing the Reed-Bulwinkle Bill and similar legislation in Congress, spokesmen of the Department of Justice criticised regulation by the Interstate Commerce Commission on several counts. First, that the Commission can review only a small per-percentage of the rates filed by the carriers. Second, it can fix only the limits of the "zone of reasonableness" in rate making and cannot fix rates or charges as low as they would be fixed by the forces of competition. Third, the decisions of the Commission in rate cases have the effect of invading a field which they argue could be covered better by litigation in the courts.

The Interstate Commerce Commission now has the responsibility

(*Continued on Page* 65)

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WL:WSR

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THE TRAIN'S LATE AGAIN

(*Continued from Page* 38)

over the unreasonable length of time it takes to accomplish rail deliveries."

"Simply grumbling isn't constructive," protested Hankins. "Aren't you traffic managers taking any positive action?"

McCormack nodded gravely. "Right you are, John, but in this case the growling is merely the surface indication. The traffic men of the shippers are really exerting every possible effort to induce the rail carriers to reduce time in transit. In addition, various shippers' organizations are endeavoring to impress on the individual shipper the need for cooperation."

"For example," continued McCormack, "in the case of less than carload forwardings there are some things which shippers can do to help the railroads as well as themselves. Proper packaging is one item. Then, too, shippers should make sure that all packages are plainly and clearly marked as to consignees and destinations. Bills of lading should be legible. Shippers who use so-called ferry cars ought to work closely with the local freight agent as to transfer points. Where shippers use the railroad motor truck pick-up privilege, or consignees require store-door delivery, they should see to it that the carriers' trucks are not held waiting for loading or unloading. Nevertheless, the reality remains that the less than carload service of the railroads, as well as the carload movement, is far below the pre-war standards."

"Well," bewailed Tripp, "the holdups by the railroads on shipments of all kinds are proving mighty costly to us in more ways than one. As an illustration, we, the same as many other manufacturers, base payments for our raw materials on the date they are shipped by our suppliers. Where a carload formerly took three days to reach us from a given point of origin, it now takes ten, twelve, or more days. This means we have a great deal of money unnecessarily tied up."

"Yes," added Hankins, "and the railroads are throwing our production schedules entirely out of line, thereby compelling us to maintain heavier inventories of raw materials. To make matters worse, not only do we have to dance attendance, but the railroads frequently make bunched deliveries of cars. This forces us to spend money for extra labor to release the cars if we are to avoid demurrage charges. Quite often we get stuck with demurrage despite our efforts to avoid it."

"All that you two have said is true," agreed McCormack, "and the industrial traffic managers keep presenting such information to the railroad officials. Yet the time in transit does not materially improve."

"Seems to me," snapped Knowles, "that we should have some recourse. Wouldn't it be a good plan to start a suit with the Interstate Commerce Commission against the railroads on the theory that their dilatory acts create monetary losses for us?"

McCormack shook his head. "I don't think we'd get very far with a charge of that sort."

"Why not, if we can prove we've been financially injured?" said Knowles.

"Because," explained McCormack, "the liability of common carriers for goods which they have received for transportation is that of an insurer.[1] Common carriers are also bound to transport such merchandise promptly, but they are not insurers of prompt transportation. The duty of common carriers is that of responsible diligence.[2] Common carriers are not responsible for mere delay not affecting the safety of merchandise transported, when no lack of diligence is proved."

McCormack went on to say: "Just why the railroads have failed to more rapidy improve their freight service is a mystery to many shippers. It must be conceded, though, that the shippers have offered a tremendous tonnage to the rail carriers.

"Jack, do you honestly believe the heavy amount of tonnage tendered to the railroads by the shippers is the sole reason for poor time in transit?" Tripp asked.

McCormack gazed thoughtfully out of the office window. "By no means. Actually, it goes deeper than that. One could imply that among the basic factors are demands by the railroad brotherhoods as well as the policy of railroad management in dealing with the brotherhoods."

"Even if that were so, in what way could those two elements bring to pass reduced efficiency in railroad freight performances?" questioned Knowles.

"All too frequently," McCormack argued, "it has appeared as if railroad management gave ground too readily in agreeing to demands of the brotherhoods. This, in turn, naturally would lead to arrogance on the part of the brotherhood leaders and eventually of the brotherhood members."

"How might lack of discipline on the part of railroad workers in the freight divisions affect time in transit of products, etc?" Knowles wanted to know.

"In many cases," McCormack stated, "the use of crews might consume unnecessary time, thereby making it impossible for loaded freight cars to quickly reach a 'make up' yard for prompt forwarding. As against this, one could suggest that railroad management might contribute to slow time in transit if it should issue instructions to hold loaded freight cars at designated points until a trainload was accumlated."

"It all comes down to this," McCormack concluded, "that unless railroad management and members of the brotherhoods both fully realize that each has a duty and a joint responsibility in serving the shipping public, it will be a long time before we obtain any definite and lasting improvement in rail delivery time."

(1) and (2) See 42 M.C.C. 225.

SECTION 5A, ICA

(*Continued from Page* 63)

for administering the provisions of the Reed-Bulwinkle Amendment to the Interstate Commerce Act in accordance with the provisions of the Act with the objective of making the conference method of rate-making work and to insure to shippers and carriers the advantage of this method of rate-making without permitting abuses which would impair the efficacy of this method of arriving at the prices for transportation services.

To the present writer the conference or rate bureau method of rate-making appears to be a realistic method of joint carrier rate-making because of the diversity of rate problems and the many carriers and industries concerned in freight rates and charges of many different carriers. Such agreements are in the public interest, in his opinion, if the following principles are observed: 1. Registration of traffic association rate bureau agreements with the Interstate Commerce Commission; 2. Provision for Interstate Commerce Commission to regulate bureau's rules of procedure; 3. Prohibition of inter-carrier agreements or procedure which include the use of unfair trade practices; 4. Prohibition of carrier rate bureau or conference procedures which result in dilatory tactics which prevent proposed rate changes from being considered promptly, or promptly going into effect; 5. Preservation to each member carrier of right to act independently upon notice to other carriers and to the Interstate Commerce Commission; 6. Preservation of right of interested shippers to appear before the bureaus to be heard on behalf of or in opposition to any rate proposal.

There has been the same misunderstanding of the matters which may be covered in the applications for approval of agreements to be filed with the Interstate Commerce Commission,—whether the rates may be so filed or the agreements or conference organizations under which the rates are to be made. To the present writer this question is answered by the remarks made in the Senate Report on The Reed Bill: "It is important to note in this connection that in the case of a rate bureau, or any similar joint organization dealing with rates fares, charges (including charges between carriers), classifications, divisions, allowances or routes, it is not the rates or other collective actions resulting from the bureau procedures that the bill contemplates will be submitted by the carriers to the Commission for approval. What is to be submitted in such case is the basis agreement setting up the bureau and defining the nature and scope of its activities and its mode of procedure.[8]

[8] Report of the Senate Committee, Report No. 44, 80th Congress, 1st Session, 1948, p. 13.

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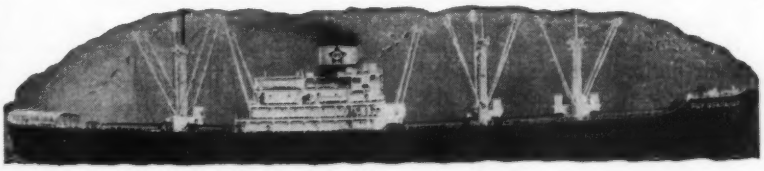

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AIR STANDARDS

(*Continued from Page* 25)

with remarkable vigor. In the cooperation between nations demonstrated at the various international air conferences is to be seen a sign of a future where the same spirit will extend to the United Nations and other agencies aimed at developing understanding between nations.

The progress of international standardization in this one phase of distribution should be observed with the same attention a physician gives to the heart beat of his patient. If air standardization continues at the pace it has set in the past few years, there is indeed hope for the world.

Thus, an examination of distribution standards for air transportation is, in a sense, a study of the world in microcosm. Fortunately, the situation is good; international air standards are a growing reality.

The outstanding agencies in this worthwhile field of endeavor are a trio cryptically known as ICAO, IATA, and ISO. The first speaks for cooperation among nations in international air transportation; the second, international cooperation among private air carriers; the third, international cooperation among national standards bodies. Each operates independently, yet cooperatively, toward a common goal of standardized air transportation.

ICAO, the International Civil Aviation Organization, a specialized agency of the United Nations, was organized Nov. 1, 1944 at a convention called by the United States in Chicago. In an environment of good-will 52 nations assembled in conference to accomplish the task of opening the air to international trade just as in earlier days international action had opened the seas. The agreements made at the convention are of unusual character in that nation after nation sacrificed limited self-interest in order that "international civil aviation may develop in a safe and orderly manner and that international air transportation services may be established on the basis of equality of opportunity and operated soundly and economically . . ." (Quoted from the preamble of the Convention of International Civil Aviation.)

The final act of the convention provided for, among many other things, the development of international standards and recommended practices.

"Each contracting State undertakes to collaborate in securing the highest practicable degree of uniformity in regulations, standards, procedures, and organization in relation to aircraft, personnel, airways, and auxiliary services in all matters in which such uniformity will facilitate and improve air navigation. To this end the International Civil Aviation Organization shall adopt and amend from time to time, as may be necessary, international standards and recommended practices and procedures dealing with:

(a) communications system and air navigation aids, including ground marking;

(b) characteristics of airports and landing areas;

(c) rules of the air and air

CHECK LIST OF STANDARDS FOR AIR TRANSPORTATION

(*Continued from Page* 25)

General Operation Rules. 1945. 6 pp.	$0.05
Foreign Air Carrier Regulations. 1945. 2 pp.	$0.05
Transportation of Explosives and Other Dangerous Articles. 1945. 2 pp.	$0.05
Air Traffic Rules. 1945. 6 pp.	$0.05
Scheduled Air Carrier Rules. 1946. 26 pp.	$0.10

U. S. Navy Department, Bureau of Supplies and Accounts, Storage Div., SWX, Education and Publication Section, Washington, D. C.
"Airborne Cargo, Packing and Handling" (NAVSANDA Pub. No. 10) 42 pp.
"Air, Instructions for the Preparation of Cargo for Shipment by" (RSX- 219) 7 pp.

traffic control practices;

(d) licensing of operating and mechanical personnel;

(e) airworthiness of aircraft;

(f) registration and identification of aircraft;

(g) collection and exchange of meteorological information;

(h) log books;

(i) aeronautical maps and charts;

(j) customs and immigration procedures;

(k) aircraft in distress and investigation of accidents;

and such other matters concerned with the safety, regularity, and efficiency of air navigation as may from time to time appear appropriate."

It is of interest and significance to note the official ICAO interpretation of the terms "standards" and "recommended practices." A standard is considered as "any specification for physical characteristics, configuration, material, performance, personnel, or procedure, the uniform application of which is recognized as necessary for the safety and regularity of international air navigation and to which Member States *will conform* . . . in the event of impossibility of compliance, notification to the Council is compulsory . . ." Unlike the standards discussed hitherto in this series of articles, those developed by ICAO are compulsory. A recommended practice, on the other hand, is one wherein ". . . Member States *will endeavor to conform,* in accordance with the Convention . . ."

In other words, ICAO standards have teeth: they are more than the mere hopeful mouthings of well-meaning individuals. Because each standard must conform to a wide variety of situations and conditions, the standard will usually be concerned with *ends* rather than *means.* In other words, an ICAO standard will not state that a plane must have such and such a grade of steel or such and such a type of aluminum; instead, the standard will say, "All material used in the primary structure shall conform to approved specifications." Attempts at specifying chemical compositions for metals, construction details for plane interiors, and other restrictive regulations would be foolish since materials, construction methods, and the planes themselves will vary as do the requirements, facilities, and needs of individual nations. For example specifying aluminum for engine parts may result in undue hardships for those nations that do not have access to cheap aluminum.

At the Chicago convention a provisional organization (PICAO) was set up to function from Aug., 1945 until such time as 26 nations (half those present) signed the convention. Dec. 11, 1946, the United Nations General Assembly, as one of its first official acts, recognized ICAO as a specialized agency related to the UN. Five months later, after the required number of states had signed, ICAO began to function in its permanent headquarters in Montreal. As now organized, ICAO has a legislative body, the assembly, in which all members are represented with one vote each. The assembly elects a 21-member council which serves as the executive

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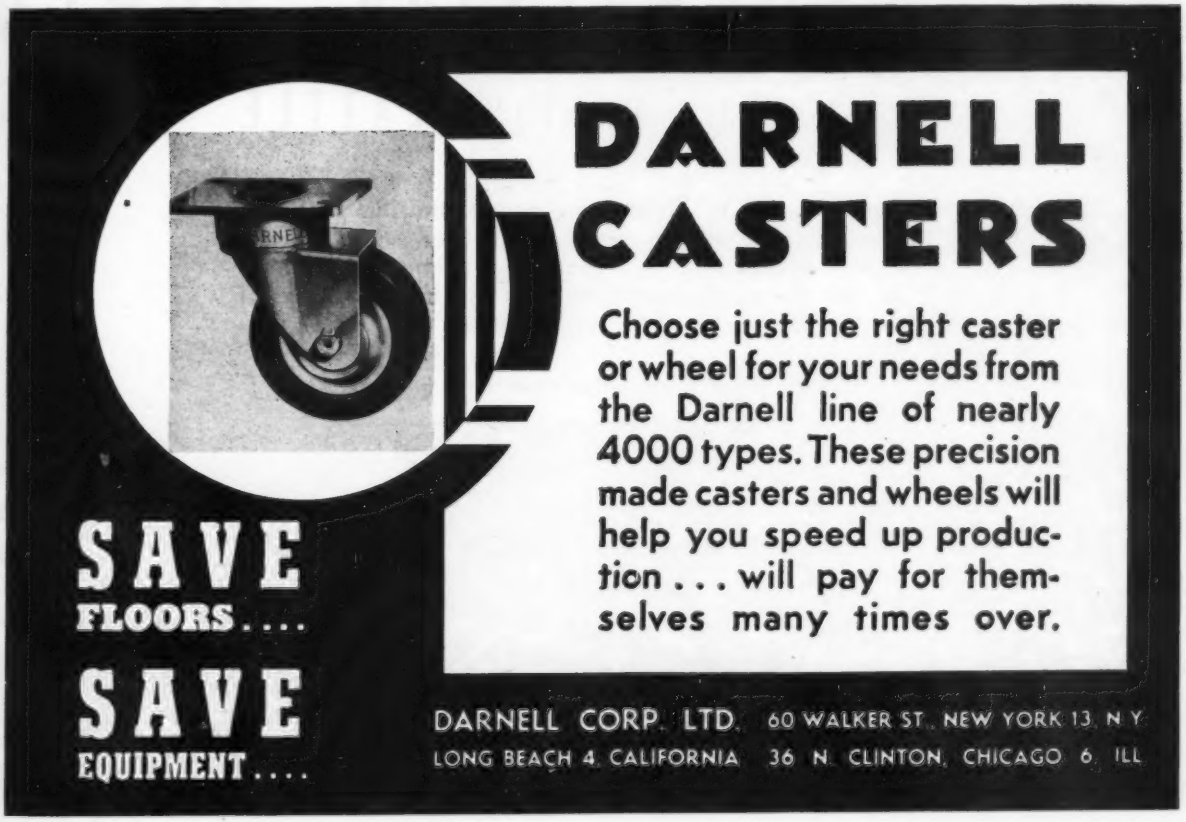
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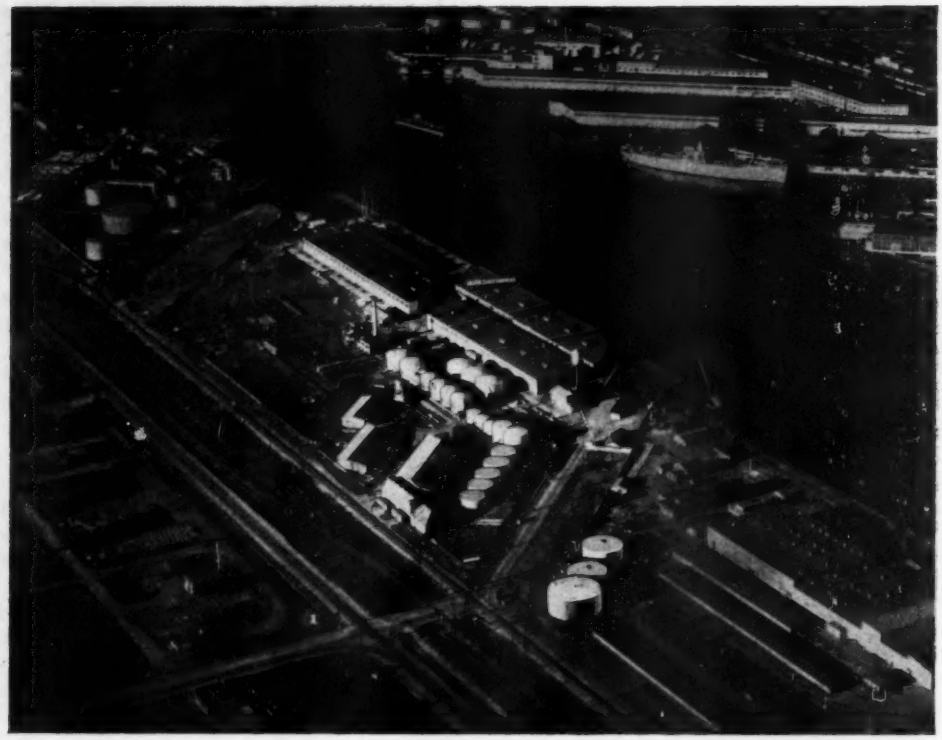


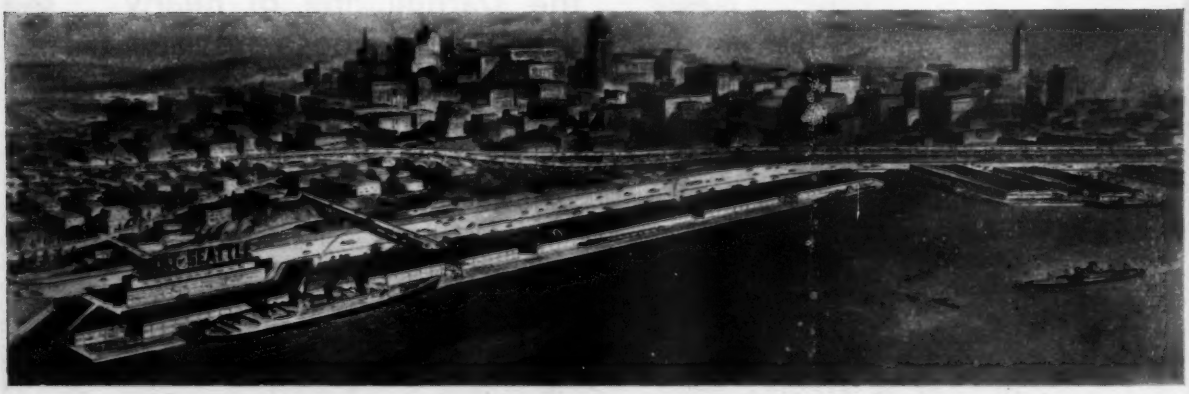
Oil tanks housing imported tung, coconut and fish oils which are processed for further shipment.

PROGRESSIVE PORTS

. . . this month: SEATTLE

Seattle's port modernization and expansion program, involving $20 million over a 10-15 year period, awaits voters' approval . . . Seattle's proximity to strategic Alaska makes November election the big port news of the month.

Artist's sketch of city, showing proposed quay-type terminal and viaduct.



A COMPREHENSIVE modernization and expansion plan, calling for an expenditure of more than 20 million dollars over a 10-15 year period, has been advanced by the Port of Seattle Commission to provide for the ever-growing needs of this Northwest gateway to Alaska and the Orient.

First phase in the ambitious plan will be considered by Seattle voters in November elections when they act upon a proposed $1,750,000 bond issue submitted by the Port Commission. Voter approval would permit:

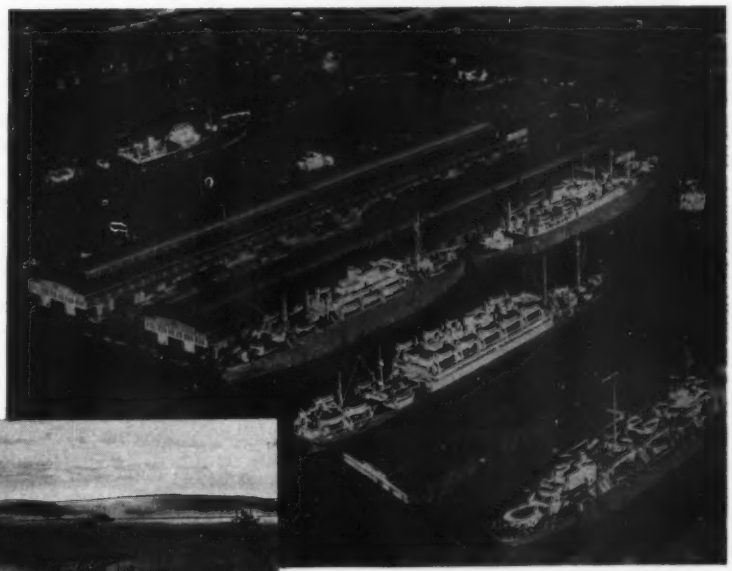
1. Allotment of a million dollars for development of the Port's Salmon Bay Terminals, home of the famed Northwest and Alaska fishing fleets. This sum includes funds required for a new bulkhead, mooring docks, net sheds, part of the cost of a viaduct leading to the area and for a restaurant and shops to provide an added tourist attraction.
2. Construction of an extension to the seven-story refrigeration plant at the Spokane St. Terminal and fish storage facilities, including sharp freezing, at the Bell St. terminal.

The Port of Seattle, as a municipal corporation, is today the largest terminal operator on the coast, controlling better than 50 percent of the berthing space on the waterfront. Starting from scratch in 1911, the Port has been selfsustaining from an operating standpoint and now possesses assets which at present replacement values exceed 25 million dollars. Employing 250 people, the Port of Seattle has an annual payroll exceeding a million dollars and realizes a gross income of close to two million dollars a year.

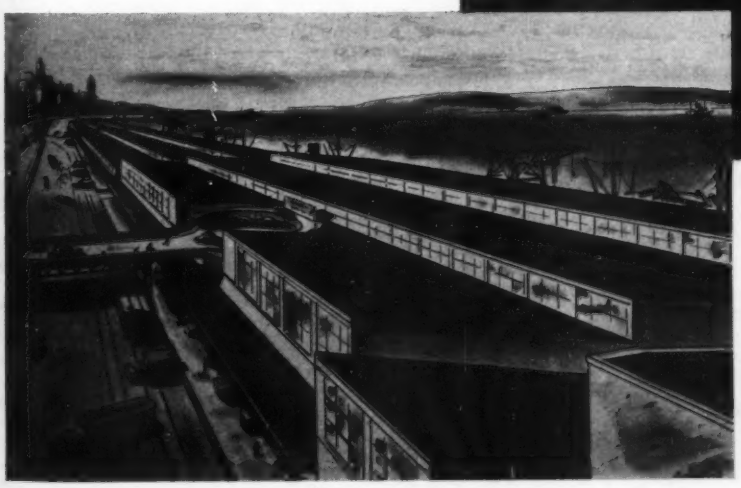
As a general cargo port, the entire port of Seattle ranks second in total tonnage handled among Pacific Coast ports. Gradual resumption of normal trade with the Orient, plus this trade's vast future potentials, has stimulated an unprecedented interest in expansion of the port's facilities. As a direct means of preserving Seattle's future as the "New York of the Pacific" against competition not only from other West Coast ports but against mounting Gulf port competition as well, the Port of Seattle has projected elaborate plans for waterfront facilities said to outmode any on the Pacific Coast.

Chief feature of the plan is an advanced quay-type parallel development stretching more than 3000 ft from its Bell St. terminal south to what is now Pier 56 at the foot of Seneca St. there to be

(*Continued on Page* 79)



Another view of terminal and viaduct shows two-level handling of passengers and freight.



War-built pier now being used for the Alaska trade.

PROTECTIVE CUSHIONING

Two cushioning answers on the same package.

A good example of "point of contact" protective packaging

A GOOD package is much like a good shoe. You may have to put out a little more money for it to begin with, but from then on you start saving. A good shoe and a good package both make a good impression on your friends and on your customers. They make them feel you rate yourself or your product as worthwhile. A good shoe and a good package prevent internal damage. Your product doesn't get "fallen arches!" Many products, particularly furniture, are damaged internally in transit, and frequently such damage is unrecognized on first examination. Upon discovery at a later date, the distibutor or the customer wrongly attributes the damage to "poor quality merchandise," and a customer is lost. And, of course, a good shoe and a good package give a product many more miles per dollar expended.

The purpose of a good shipping package is to bring your product to its destination at what we call the "lowest comprehensive cost." Comprehensive cost includes many things, not only the direct labor charges for assembling the package, the materials and ingredients going into the package, but also such indirect items as good will, reputation with the customer, service and repair charges on damaged merchandise, and so forth. Even when claims are paid by the carrier, "comprehensive cost" still includes your handling and service charge on the claims.

Many shippers ask, "How can I get a good package? I am interested in low comprehensive costs, but how do I arrive at them?"

There is no mathematical formula or method of evaluating your lowest comprehensive cost. You must get the heads of your production, advertising, shipping and promotion departments together to decide on what your production package can do for you, and there are many angles to this.

Tangible or direct costs of the package can always be quickly computed by a capable cost analyst or, if you prefer, by a shipping department representative. The cost of materials and labor expended on the package, divided by the salable value of the goods packed, gives the ratio or "percent of package to product." It runs roughly from two to eight percent in the majority of cases, probably averaging around five percent.

But let us visualize a complete package. This normally consists of an outer container, the cushioning blanket or material, and the unit under test within.

Now any article can be protected against damage in shipment if an exceptionally strong container is used, plus an excessive amount of inner cushioning material. This is obviously a waste of money and materials.

Our problem here is to investigate and thoroughly understand both the article to be packed and the material available to protect it, ignoring the container itself, about which much has been written, and which is fairly well understood. There are a number of types of cushioning materials, some more acceptable than others, depending upon the application.

Among these materials are corrugated pads of many kinds, wood excelsior in several grades, cotton batting, shredded papers and cellophane, pads made up of these ma-

IN PACKAGING

For product protection, don't overlook the important cushioning materials, excelsior, cotton batting, corrugated pads, etc., which absorb shocks and prevent surface marring . . . There are four basic methods of using cushioning materials: bracing and blocking, flotation, absorbent packing and surface protection.

By M. R. GRANDON *President, Insul-Flex Co.*

terials, rubberized hair, and the felted and bonded wood fibre blankets of various thicknesses.

It is an interesting fact that some articles are best protected against damage by a rigid package, while others must be so loosely packed that they are almost floating free. Between these two extremes are such a variety of conditions that every product requires an analysis of its design, its inherent strength, its function, its finish, and most important, its method of distribution. The analysis must be made before the packaging engineer can start his work.

To this end, a new value of the degree of shock has recently been introduced, which is expressed in "g's." The "g" factor is the safe shock that a unit can withstand without damage or impairment of its usefulness. It can be defined as the ratio of the maximum dynamic shock load which it can stand without damage to the static load due to its weight. If a unit weighing one pound has a "g" factor of 100, it can be subjected to a shock of 100 lb. without damage. This "g" factor must represent the ability of the most delicate part of the unit to withstand shock, and consideration must be given to the position of the unit in the cushion so as to minimize shock.

Expressed in another way, the "g" factor is the resistance of a unit to mechanical abuse in terms of how great a deceleration of motion it will withstand before damage ensues.

During the fall of a package, the box and all its contents operate as a unit and fall as one. This condition remains true up to the point of impact, when each part becomes independent and operates as follows:

First, the box stops with a jolt. The cushioning then begins to move downward. This movement may be very slight but can be measured. Next, the article begins to decelerate into the cushion until it has used up its momentum. If the cushion is not deep enough to absorb it, it hits bottom too soon. Now, if the depth of the cushion

Fine instruments and electronic equipment, "floated" in Tufflex cushioning material.

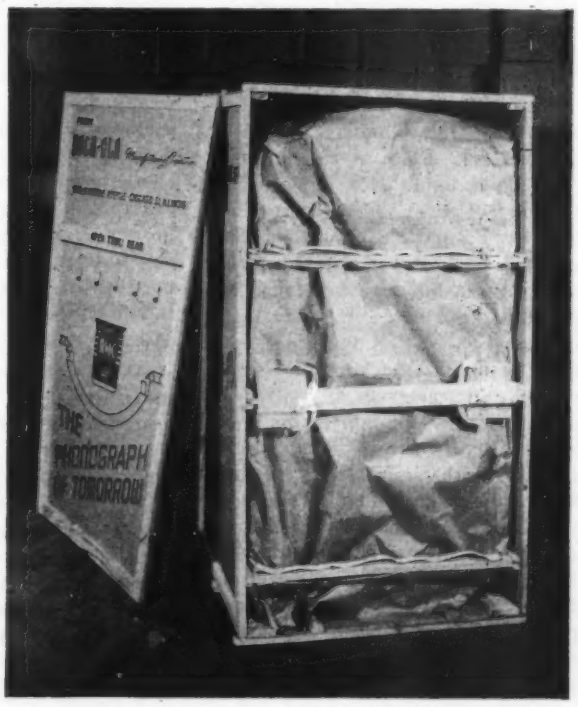
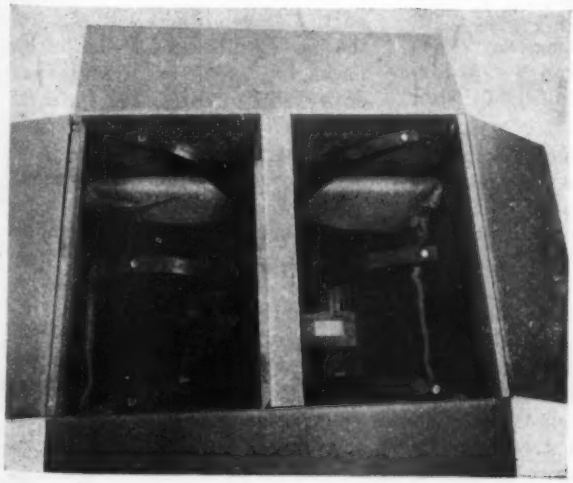


Table and top cushioned in non-abrasive Tufflex blanket.



is sufficient when the unit has exhausted its downward momentum, the balance of the shock is taken by the unit packed, and must not exceed the allowable shock.

Careful attention must be paid to one of the principal factors, the depth of the cushion necessary. Where the size of the package is important, we need to determine the efficiency of one material over another.

Once having determined the depth of cushion required, it is necessary to select the proper kind of cushion which will support the load and at the same time deflect properly for the load to which it will be subjected. To make a choice we must consider the qualities necessary in the cushion material:

1. It must be of the proper density to support the unit without undue compression.
2. It must give readily and uniformly under the stresses it may be subjected to.
3. It must withstand rough handling and repeated shocks without deteriorating.
4. It must resist moisture and mold conditions.
5. It must have the resiliency to retain its form under repeated shocks.
6. It must not be abrasive in action.
7. It must not "dust."

There has been much interest in wood fibre felt blankets, specified in the new shipping regulations. The trade name is "Tufflex," a product of the Wood Conversion Co., St. Paul. The fact that this product is approved for the most exacting cushioning problems in packaging is a noteworthy endorsement. Certain unique qualities, such as shock-absorbing and non-abrasive characteristics, resilience, cleanliness, ease of fabrication, and availability in a number of thicknesses, widths, and densities particularly recommend it to the furniture industry, instrument manufacturers, and others who need maximum cushioning protection for fragile and delicate merchandise and fine finishes.

Industry can and must be educated to realize that with better overall cushioning and packaging, particularly through the use of more quality cushioning, a lower cost of doing business results; in other words, we reach a lower comprehensive cost.

Now getting on to the mechanics of cushioning, there are four basic methods of using cushioning blankets or pads as a protective wrapping.

Bracing and Blocking. Bracing is a method of interior packaging to prevent movement of contents within the container and to distribute the weight to all its faces. This method uses the specified cushioning in conjunction with wood bracing, metal strapping, and corrugated board. It prevents scratches, press marking, and burns by coarse "holding" materials.

Blocking, often confused with bracing, is a method of wrapping irregularly shaped objects with soft resilient cushioning materials to "block-out" the voids. The resulting package is fairly regular in shape and comparatively easy to handle in a container. Excessive stresses are avoided at projecting points. The distribution of shock is facilitated by distributing such loading evenly.

Flotation is a method of completely protecting the article from shock and vibration by wrapping it in a thick cushioning material of sufficient thickness so that its wrapped shape conforms to the shape of the container. Used as flotation packaging, belted and bonded wood fibre blankets, as an example, suspend a product within the shipping package. They function in the same way when used as an overwrap for a container which is set inside an outer case for shipment.

Absorbent Packing is a specialized method of interior packaging designed for cushioning the fragile container of a liquid in shipment. The desired results are adequate protective cushioning against shock and rapid and thorough absorption of liquid in case of breakage or leakage at the closure. Certain specifications of wood fibre blankets, as well as other materials, are produced to meet the requirements of absorbent packaging. These types are capable of taking up moisture quickly and have the capacity to absorb up to 16 times their own weight in liquid within 30 seconds. Such materials meet government regulations.

Surface Protection is a method of employing cushioning material to protect highly finished and delicate surfaces of wood, metal, plastics, or glass from damage by contact with other articles or other packaging materials which cause abrasion or chemical action. In the case of infiltration of sand, dust, or cinders into the package during transit, the nature of these finish protection materials is such that the abrasive material works into the soft protective cushion before it has a chance to scratch or mar the high finish of the product.

Industries quick to take on new packaging ideas and eager for assistance in developing good, attractive packages, make products like these: domestic appliances, instruments, furniture, cosmetics and perfumes, coin operated machines, radio cabinets, candles, confectionery, frozen foods, recordings, lighting equipment, unit air conditioning equipment, pharmaceuticals, electronic tubes, sterling silverware, toys and games, photographic equipment, plumbing and heating fixtures, auto accessories, flowers, and aircraft accessories.

Numerous variations and combinations of the four basic methods of cushioning exist, and there are perhaps thousands of illustrations that could be drawn upon to represent the many combinations of particular conditions. It is up to the packer to diagnose each of his packaging problems as a separate entity and to determine which of the various cushioning methods will best do the job for him.

Shippers have not given enough attention to the comprehensive costs incurred through mediocre or poor packaging. However, optimistic signs on the horizon are noticeable. The combined efforts of organizations such as the National Furniture Traffic Conference, the I.P.E.A.A. and others will gradually bring industry to the realization that good packaging is good business.

AIR TRANSPORT PROBLEMS

(*Continued from Page* 35)

airlines outlined in 1944 became so vast and complicated and so susceptible to upward revision that costly caution and delays were occasioned.

3. *What about future transport aircraft, with regard to size?*

While there may be few technical limits to the size of aircraft, there is a point of diminishing returns, particularly applicable to aircraft where size is a major feature.

Most industry planning along this line has been based on a break-even passenger load factor of 60 percent and other payload of 55 percent. Experience has frequently shown, however, that these percentages are more likely to be in the neighborhood of 65 and 70 percent respectively. When these factors come down to a 50 percent passenger load factor and other payload at a 45 percent rate—a factor in which plane design plays a great part—with direct and indirect flying costs meeting happily at a much lower level, the industry shall be much nearer maturity and self-sustenance. Also, when one considers other forms of transportation, particularly the rails and buses, we might learn a lesson from them by noting that they chose a multiplicity of units rather than great increases in unit size.

4. *Are there any limits to the speed of air transport?*

From the engineering point of view there do not appear to be any well-defined speed limits. If, however, you can have breakfast in New York and lunch in San Francisco, or breakfast in Los Angeles and dinner in New York, isn't that fast enough? This is another place where the point of diminishing returns enters the picture. Sonic and trans-sonic speeds are of much more interest to the armed services than they are to commercial aviation at the present time.

5. *What are the solutions to congestion at some of our major airports?*

The simplest answer is, of course, more airports. Undoubtedly time will solve this problem and much money has been appropriated by the Congress and by states, municipalities and cities for this purpose. A short time ago, the manager of the Washington National Airport stated that 40 percent of the landings under instrument conditions there, were made by the military services. It seems to me that this percentage is entirely too high at congested airports, if Washington is to be taken as typical, particularly when one considers that as a democratic people we should be primarily interested in utilitarian ideas. The records will show that much of the so-called "stacking" at congested airports is due to our beloved brethren in the military services. Under instrument conditions wouldn't it be far preferable for the military to be required to land at some distant airport rather than delay from thirty to several hundred civilian passengers at a commercial airport? We in commercial aviation owe so much to military aviation that one hesitates to criticize, but from a utilitarian standpoint, more consideration should be given to this subject so that the unpleasant conditions at our congested commercial airports can be ameliorated.

6. *Is the air transport industry over-regulated?*

My answer is in the affirmative. I feel sure that there should be a reduction, a simplification and a clarification in our present regulations, at the same time shifting some of the responsibility from the government to the airlines.

7. *What about competition?*

We believe in competition, especially under the policy outlined in the Civil Aeronautics Act of 1938, which is designed to develop the scheduled airline industry by promotion of clean and constructive competition. It is the general consensus of opinion, however, that there is in some cases too much duplication in routes, lines and services. In the past six months the fact has been shown that there is more air competition between certain important centers than there is rail competition. Situations of this sort led the President's Air Policy Commission to

Publishers Plan MHI Show Promotion

Publisher-members of the Material Handling Institute have agreed, according to Harry S. Webster, Jr., publisher of DISTRIBUTION AGE and Chairman of the Public Relations Committee of the Institute, to recommend to their advertisers the use in their advertising copy of the standard show promotion design illustrated above and the standard slogan: "Efficient Handling Reduces Costs."

For the purpose of assisting publisher-members in publicizing the exposition which is to be held in Philadelphia Jan. 10-14, 1949, a check list of publicity form suggestions been prepared and may be obtained from Banner & Greif, in charge of publicity.

recommend that the CAB defer for a time decisions in new route cases and during this breathing spell survey the industry status and possibly develop a more cohesive philosophy leading toward clarification of their thinking about route structures.

8. *What can be done about improving route structures?*

I fully appreciate that one is treading on delicate ground in making suggestions along these general lines. However, if some such survey were undertaken, as the President's Board suggested, I believe both the domestic and international route structures could be improved in efficieney and airline economics advanced in general. Many studies have been made and a wealth of facts and figures are already available. A resurvey of the situation and a collation of the material already available should be extremely useful to the CAB in adjusting members' philosophy to conditions surrounding the industry which have changed greatly in the post-war period.

9. *What about subsidy?*

I should like to state as definitely and positively as possible that payment for service rendered is not a subsidy.

The Civil Aeronautics Act of 1938 defined the manner in which the Civil Aeronautics Board may determine the rate of mail pay to scheduled airlines. Air mail pay rates are either compensatory alone on the basis of a service charge, or more than compensatory according to the needs of an individual airline as determined by the CAB, under principles laid down in the Act of 1938. Consequently, the rates of mail pay differ widely. On the profitable routes between large cities or populous areas, the rates, almost without exception, are only compensatory. However, to meet the objectives of the Act of 1938—to establish and maintain an air transport system adequate for commerce, the postal system and the national defense—the smaller routes in less productive areas must be maintained, and, if need be, partly sustained. In other words, if an airline that is operated honestly, efficiently and economically, cannot make expenses and a small profit because of economic factors more or less beyond its control, it may ask the board for a higher rate of mail pay.

I think this arrangement is sound, and I believe it has worked well in the public interest. Last year the board made a study of this aspect of air mail pay. It was found that 92.3 percent of air mail was carried at a compensatory mail rate, and only 7.7 percent was carried over lines receiving more than such a rate. And a highly significant fact is this—that the volume of air mail in ton miles on the ten largest local service airlines increased 171 percent in 1947 over the year before. It is signifi-

Transportation Facts

The Survey of Current Business for August, page 9, compares the production of selected manufactured products during the first half of this year with the same period in 1941. Surprisingly enough, railway passenger cars show an increase of over 250 percent, leading all other items. But, according to the American Railway Car Institute, 1941 was not a representative year; in fact, output of passenger cars in that year was low, with the result that the moderately good output this year shows up quite extraordinary by comparison.

We learn further that, so far this year, about one-third of all car output (contract and railroad shop) was made up of coaches, about the same proportion of sleeping cars and the remainder miscellaneous types, including mail cars.

Other transportation items compared by the Survey included freight cars, truck trailers, and trucks and busses. Freight car production for the first six months showed a moderate increase over 1941, despite the fact that output this year has been fairly active. Here again is a case of comparisons with a prewar year proving somewhat deceptive. Figures from the ARCI for eight months this year show an output of 74,397 units, including 19,168 produced in railroad shops.

° ° °

Freight trains in the first half of 1948 carried more tons of freight per train than 1947, averaging 1,153 tons. This figure was derived from gross figures on freight carried and trains run. With speed of runs remaining unchanged from 1947, the factor largely responsible for the above .6 percent increase was the number of freight cars per train, which in the first half of 1948 was 1.5 percent over Jan.-June 1947.

° ° °

Dr. Melvin Thomas Copeland of the Harvard School of Business Administration has been appointed chairman of an advisory council established by Senator Capehart of Indiana to study the effects of the Supreme Court's basing point pricing system and report to the Senate Committee on Trade Policies. The Committee will not hold hearings until after the election.

° ° °

National Airlines will initiate all-cargo flights on Sept. 1 with two way scheduled stops between New York and Miami. To it will be linked a pick-up and discharge plan for other cities on the National system. The planes used will have eight by nine loading doors able to accommodate extra-size loads. The planes will be able to take on as many as three jeeps.

° ° °

The RFC has been directed by President Truman to study air carriers' finances and to suggest means whereby any drastic retrenchment in air transportation may be prevented and new equipment obtained by means of increased flotations at favorable rates. Both the CAB and the Bureau of the Budget are cooperating with the RFC.

° ° °

High-level trucking activity continued in June, according to ATA, bringing the sixth month average index figure so far this year up to 222, compared with 199 for the comparable period last year. June was 17 percent over last June, with tonnage carried aggregating 2.8 million tons. Both figures and indexes must be taken with caution since coverage by the Association is incomplete and varies with the number of reports received by month.

° ° °

Air Cargo Not Restricted

All properly qualified airlines may participate in Air Cargo, Inc., according to the CAB in an opinion identified as Agreement CAB No. 1041. The CAB statement pointed out that cooperative efforts of air carriers to develop and improve air transportation and cut costs would "continue to receive our support and encouragement." The CAB statement said in part, "we shall approve specific arrangements to accomplish such purposes only after careful scrutiny to . . . protect the public interest involved."

The Air Cargo agreement, it was pointed out, did not exclude participation by other air carriers. An anti-exclusion policy, further, was consistent with the purposes of the Sherman Anti-trust act and related court decisions. Consequently, the CAB pointed out, "we conclude that the right of participation in industry arrangements upon an equitable basis . . . constitutes a sound public policy which should be applied to air carrier agreements through conditions imposed on our approval thereof" and "an air carrier agreement permitting a discriminatory barring of future members may be in violation of section 411 of the civil aeronautics act."

cant because it means that far more persons living in remote areas obtained airline service because air mail pay under these terms permitted new companies to go into operation, or routes to be extended.

There is a paragraph in a report on Public Aid to Transportation made by the Committee on Interstate and Foreign Commerce of the House of Representatives, which discusses the matter of whether or not there is a subsidy in air mail pay in these words:

> "If the CAB properly discharges its statutory functions no mail subsidy accrues to the air carriers or their stockholders; the subsidy is rather to the service or community that fails to provide revenues commensurate with the costs assignable to that service, and a subsidy of that character exists wherever a carrier supports an unprofitable route or service on the basis of earnings accruing from another and more profitable service. If the board is ineffective in discharging its rate-fixing functions, if the costs of inefficient and uneconomical or dishonest managements enter into the calculation of mail rates, or if the mail rates contribute to excessive earnings, then the carriers are subsidized. Otherwise, it may be said that since 1940, when the CAB began to exercise effective control over mail rates, the subsidy to air carriers in the ordinary sense of the word, does not enter into the mail payments."

10. *What about the charge that the airlines are a monopoly?*

The word "monopoly" crops up about our industry continually, but without justification With 33 scheduled airlines in our picture, how can there be monopoly?

The truth of the matter is that there is *too much* competition, not *too little*. It seems to me that it is a mistaken idea to be critical of any person, any industry or of anything merely because of bigness. The important question is not size, but of the service it can give.

SHOP MULES *preferred* BY 73 INDUSTRIES

Photo Courtesy Crown Cork and Seal Co. illustrates A-21 SHOP MULE

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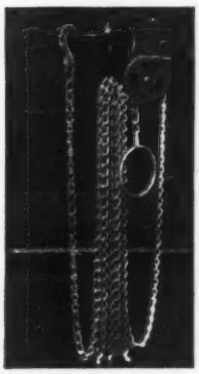

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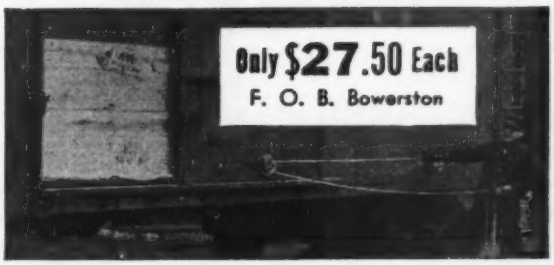

CAB AND THE AIRLINES

(*Continued from Page 36*)

then existing rates, airline equipment was inadequate to satisfy the demand for air cargo space. At that time an industry-wide rate level of approximately 17.5c. per ton-mile existed and bulk shipments were moving in considerable volume at rates of 14c. per ton-mile and up. It is pretty well admitted by all concerned that the rate reductions which took place in October 1947 were for the purpose of diverting traffic from the non-certificated operators to the airlines or vice versa, rather than for the purpose of developing new traffic. Therefore, as a result of the October reductions, a considerable amount of air cargo was undoubtedly moving at rates lower than the value of the service. This traffic consisted of large lots moving for long distances.

Smaller shipments were moving at rates higher than the 16c. per ton-mile minimum set up under the CAB minimum rate order for the past year or more and it may, therefore, be concluded that the new rates will have very little effect on the total cargo available, since the value of the service to the majority of the traffic moving at the rate level of August 1947 was higher than the present minimum prescribed by the Board.

It is a truism in transportation that a regulated minimum rate in most cases becomes a maximum rate where route competition exists. Although the CAB suggested that carriers set their rates above the minimums prescribed, the direct competitive situation, which exists on all major cargo routes, provides a perfect set of circumstances for this rule to prove itself again. If we can assume, therefore, that approximately the same amount and description of cargo will be available this fall as was available last fall and that the minimum rates will become the maximum rates, the traffic data for the months of August and September 1947 can be used to obtain an estimate of the relative yield to each of four representative cargo carriers.

The average distance per shipment for each of these four carriers is based on samples taken from traffic data during August and early Sept. 1947. They are as follows:

American	899 miles
Slick	2,012 miles
Capital (PCA)	338 miles
United	1,096 miles

Applying these average distances to the ton-miles of cargo carried in different weight categories by these airlines in August and Sept. 1947, it is seen that whereas only 45 to 50 percent of Slick's traffic would be moving at 16c. per ton-mile, 70 to 85 percent of the traffic over American and United could move at no lower a rate than 16c. per ton-mile, and practically all of the Capital (PCA) cargo could move at the 16c. per ton-mile rate. Approximate relative yields per ton-mile for the four carriers would be:

American	15.6c.
Slick	14.8c.
United	15.8c.
Capital (PCA)	16.0c.

Thus Capital Airlines, carrying shipments an average distance of approximately 340 miles, will receive an average revenue only 1.2c per ton-mile greater than Slick Airways which carries heavier shipments for an average distance of some 2,000 miles per shipment. Similar comparisons, less marked, can be made for the other airlines. The question naturally arises as to whether or not this additional compensation for the added costs of handling smaller shipments for shorter distances is adequate. A considerable portion of the CAB air freight rate investigation was directed at this very point but no conclusions were reached because of variation in the data submitted. Certainly the Board's order and the circumstances surrounding its promulgation make clear that air cargo rates are passing through a formative period, that the most intense competition prevails among the carriers, and that the experience required to develop accurate cost determination methods has not yet been had by either the Board, the certificated airlines or the non-certificated cargo carriers.

The CAB has stated that the rate differential authorized in its minimum rate order had nothing to do with the operation of freight forwarders and it was thought by many that the spread would be indequate. As soon, however, as tariffs began to be filed under the minimum rate order effective July 1, 1948, particularly those filed by the non-certificated cargo carriers, it became clear that the reverse would be true. Slick Airways, for example, provides the following rates and spreads per 100 lbs. on general commodities between New York and Los Angeles:

Weight Group (Lbs.)	*Rates Per 100 Lbs.*
25-99	$29.10
100-299	21.60
300-999	19.60
1000-1999	18.90
2000-2999	18.10
3000-9999	17.40
10,000 and over	16.80

Rate Per Ton-Mile	*Rates to Quantity Shippers (% of 25-99 Lb. Rate)*
23.8c.	100
17.7	74.2
16.1	67.4
15.5	64.9
14.8	62.2
14.3	59.8
13.8	57.7

If freight forwarders develop air cargo traffic in volume, as has been suggested as the chief reason for certificating them as air carriers, or if the forwarders intercept traffic in volume as has been urged by the airlines, the result under tariffs like Slick's will be the same. A substantial portion of all air cargo will come to the underlying carriers—the airlines—at the lowest published rates.

At the same time, shippers will continue to pay the higher rates if the forwarders operate on the "spread", as they have in ground transportation and as appears to be their intention in connection with air cargo. The Slick tariff is used here merely as an example. No one can now say whether this will be the most inviting of all tariffs filed, nor can it be said how long it will be before competition forces all carriers to introduce similar spreads to attract forwarder traffic.

The air freight rate and the question of certifying forwarders is now inextricably mingled. The potentially powerful effect that forwarders operating on the "spread" would have upon rates and airline revenues is a matter for concern. If forwarders are certificated to operate on the "spread" (made possible under the CAB minimum rate order), spreads at least as substantial as those provided by the most "generous" carrier will become general. (American Airlines, in a recent petition to the CAB for consideration of the effect of forwarders upon rates and revenues, describes the opportunities for forwarders to share in line-haul revenues as becoming "perfectly horrendous.") No airline or other cargo carrier can or will stand aside and watch traffic go to its competitors by reason of a lower rate.

If the CAB grants certificates of convenience and necessity to freight forwarders and if the spreads between large and small shipments, as illustrated by the Slick tariff, become common, it must be recognized that the forwarder would become the airlines' biggest shipper. Whatever rate is established by competition to attract his traffic, it will have to be met, even if it means that rates to other shippers must remain high to absorb part of the burden of carrying forwarder shipments. To permit forwarders to commence operations on the basis of spreads between rate groups such as those provided by Slick Airways would be a sad mistake. It must be borne in mind, however, that under the present CAB minimum rate order such spreads are

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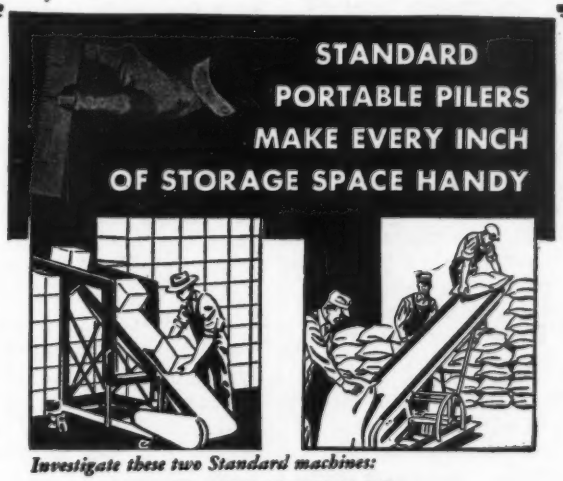

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perfectly legal even though fixed with complete disregard to forwarder operations, as the Board itself stated. Moreover, the spreads, which Slick typifies, appear to be completely unrelated to the few functions the forwarder performs or proposes to perform in air transportation or to any benefits to the carriers.

If the CAB permits forwarders to operate on the "spread", it should immediately initiate an inquiry into the reasonableness of any rate discount offered them even tho the data obtained are vague and inconclusive. The spread between rates on large and small shipments, if it is to support forwarders, is too important to the future of air cargo to be left merely to chance and competitive factors.

Under the minimum rate order it can be expected that all-cargo operators will continue to confine their activities, as they have in the immediate past, to moving large shipments for long distances. They are operating on even less than the proverbial "shoestring" and, until certificated, must follow only the most profitable course.

As time goes on competition for large shipments will tend to be on the basis of service to the shipper. Transportation history shows that "service" competition may employ measure which are just as destructive as "rate" competition and which become infinitely more difficult to control. In fact, the Board's minimum rate order makes this type of competition inevitable because:

(1) It inadequately defines what services are to be included in the minimums prescribed.

(2) There is inadequate provision for deviations from the minimum prescribed.

(3) There is an uneconomic relation between cost of service and the revenue realizable as between long and short hauls.

These conditions can be made less dangerous only through a truly flexible administration of the minimum rate order. Whether or not such will be the case only time can tell.

ASSEMBLY LINE MAINTENANCE

(*Continued from Page 59*)

Completely repaired vehicles stop at the last station of the "assembly line," the dynamometer testing point located outside the garage, next to the general repair section. Each unit is road tested with the load factor applied. Horsepower output, speedometer and oil pressure are all checked to assure that the equipment is ready for the road. When the garage superintendent gives the final OK, the vehicle moves to the parking area, just beyond the garage. The dispatcher is notified that the truck is ready for duty.

The fuel island is centrally located to give plenty of approach space for large rigs. The concrete island has a double installation for simultaneous servicing of front and rear. A canopy covers the island for protection against the elements and the pumps are painted red to make them conspicuous. There are two 10,000 gallon underground tanks, one each for gasoline and diesel fuel. Dispensing is by electric pumps with all hoses on automatic rewind spindles. And, of course, there are water and air facilities.

When one of our rigs rolls out of the gate, the driver has full confidence in his equipment. The production line system leaves no room for guesswork and pays a bonus in better driver morale, better service and lower costs.

The effect of the new preventive maintenance "production line" system on turnaround is wholly advantageous. The regular inspection and servicing of our equipment makes the possibility of breakdown, or equipment failure, much less on turnaround. The normal servicing such as oil change and lubrication, done outside our shop, is generally sufficient to make the turnaround trip safely. Preventive maintenance work is always performed on return to the main terminal.

The systematic use of "production line" maintenance has made our shop operation so much more efficient that we have been able to reduce our mechanical staff by 25%. This, of course, shows a percentage decrease in shop labor cost in maintaining the same fleet. Naturally shop buildings, equipment and service facilities must be of proper design and type to accomplish this saving.

Line haul revenue, first half 1947 to the same period in 1948, increased approximately 19%. It is estimated that, of this percentage figure, a net increase of 9% is creditable to improved efficiency in equipment due to use of strict preventive maintenance. The balance of the increase is due to such other factors as increased rates, improved business conditions, more efficient terminal operations and the opportunity to increase the average load factor that less equipment failures and increased business make possible.

A comparison of the cost of maintenance line haul equipment, again using the first six months of 1947 and 1948, shows an approximate decrease of 1.9% in this expense item to line haul revenue. It follows that the bulk of this saving is in mechanical labor cost, as the cost of parts, as well as labor, have constantly been increasing. Preventive maintenance, if properly performed, brings to light improper adjustment, wear, or malfunction of certain equipment, in sufficient time to save the necessity of a major repair by an early correction or adjustment.

Experience with the new setup has proven it to be of major importance as it has decreased line haul driver expense. Road failures have decreased 50% (comparing the first half of 1947 with 1948.) The average down time on road failure is approximately 27 hours, and the saving in driver expense is again only a portion of the total saving. Increased use factor on equipment, better customer relations, and the psychological value of better mechanical condition on the driver and the public is of inestimable value.

PROGRESSIVE PORTS

(*Continued from Page* 69)

met by modern jutting piers replacing present piers 54 and 55. These would join Pier 42, a new three million dollar installation serving the Alaska trade and providing outstanding terminal facilities. The great quay development, judged entirely practicable because of the great depth of Elliott Bay, would berth, end to end, three liners the length of the Queen Mary (1016 ft. plus another ship 400 ft. long.

On the Alaskan Way side of the Port's quay, plans propose an 80 ft. depressed area for trucking with a continuous 20 ft. wide loading platform and a continuous line of doors for through-handling of all classes of freight. Trucks and freight cars would be able to load directly from apron to shipside. Decks on the Alaskan Way side would be concrete with all-steel piling, warehouses to include both 1 and 2-story modern type structures. The entire development would be constructed to last 75 to 100 years, compared with an average life of only 25 to 40 years for ordinary piers.

To achieve unprecedented speed in the handling of cargo shipside, an unobstructed 40-ft.-wide timbered apron would be provided, making possible double-track direct loading from railway cars. The long-range plan represents a direct challenge to other Pacific Coast ports now engaged in the scramble for Pacific trade leadership.

The Port of Seattle, author of the plan, is headed by J. A. Earley, president; E. H. Savage, vice-president; A. B. Terry, secretary; and Warren D. Lamport, general manage. Shipping men call the proposals a "Seven-league" stride toward domination of the Pacific Coast shipping picture by Seattle.

Progressive Port—Houston

Next month Distribution Age will discuss another in the series of Progressive Ports: Houston. This port is attracting nation-wide attention because of its program of expansion and modernization.

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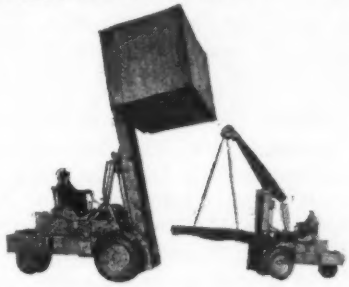

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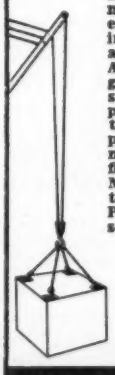

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P. O. BOX 60 — STATION ANNEX

WESTERN TRANSPORTATION

(*Continued from Page* 42)

It goes without saying that altitudes of 6,000 to 11,000 ft. over the passes cause a perceptible loss in engine performance.

Exhaust Noises Are Very Troublesome

Engine exhaust noise is common to diesel, gasoline and liquefied petroleum gas engines. In the selection of mufflers for heavy-duty equipment, several things need to be considered. First, there is a need for an accurate means of measuring exhaust noise so that a non-objectionable noise limit standard can be established. Second, it must be remembered that these large engines operate at full load on the grades for hours at a time and the muffler design must be such that there is no perceptible reduction in power output, or it is inevitable that the muffler will be discarded. Thirdly, it must be borne in mind that many of these vehicles operate between 100,000 and 150,000 miles per year, or 5,000 to 6,000 hours per year.

Diesel Smoke Is Objectionable

Smoke from diesel engines is a real problem. I have seen diesels in narrow valleys in the mountains that would put the worst coal burning locomotives to shame. You just can't pass this off as an operating problem. Some of it lies in the easy adjustment features of the injectors which permit fiddling by drivers who think that smoke means power. The fleet operator with $10,000-plus vehicles repairs and adjusts such units in a well equipped shop. Injectors should be made more foolproof so that accurate shop adjustments cannot be tampered with by unauthorized persons.

More Horsepower Wanted

Complaints about slow performance on grades are not confined to the West Coast and Rocky Mountains. Large gross weights need horsepower and this means more horsepower output per pound of engine. Answers from a number of carriers, whom I queried to obtain data, indicate that they want about 20 miles an hour on the five to eight percent grades which they encounter, and 40 to 55 m.p.h. on level roads.

Better Fuel Economy Wanted

Recently Mr. Max Ball, Director, Gas and Oil Division, Department of the Interior, in testifying before the ICC Committee of the House of Representatives, said, "The day of abundant supply of petroleum in the United States is over." From this we may conclude that the cost of motor fuel will continue to be high. From the current concern regarding the available supply of furnace oil, one can readily conclude that the days when diesel fuel was available in quantity for two and three cents per gallon will not return. For these reasons the motor carriers will be increasingly interested in engine fuel economy, as reflected in total fuel cost including taxes.

Typical Operation Practices

Routes in the West are long. Regular route distances in coastal to inland services are 400 to 600 miles. A reasonable figure to use for operating mileage is 200 miles per ten hour driving truck. A 400 mile run will have two drivers in relay and may be run in 24 hours. A 400 mile route means 800 miles round trip, which may be done in two days.

In such long haul operations, the main thing the fleet operator wants is reliability—it's a long distance between garages up in the mountains. Road failures and break-downs are extremely costly, and original cost of vehicles is secondary.

Such outfits are usually greased every trip and if the round trip happens to be 1,200 miles it can be serviced only once during that period. Is this too much to expect of a power unit? A schedule of lubrication every 1,200 miles, means a grease job every second to fourth day. A truck operator wants the servicing operations made as simple as possible so that the job can be done as quickly as possible. Our industry would save money and get more use out of its vehicles if lubrication and inspection periods could safely be lengthened to a considerable extent.

Thirty-five ton gross load, 400 miles per day, means 14,000 ton miles per day, or 84,000 ton miles per week. Tractive units are expected to operate 500,000 miles in three to four years. The western operators believe that these are reasonable expectations, and I believe they require real heavy-duty design.

Tractor Semitrailer Use Increasing

There appears to be a slight trend in the West away from truck full-trailer combinations and toward tractor semitrailer units. This tendency appears more pronounced in dry freight service than in tank vehicles.

The advent of more modern roads, with longer radii curves and wider pavements, has permitted the use of longer semi-trailers. Thirty-five foot semitrailers are becoming very popular for dry freight use. One tank carrier, in the region, reports a 40 ft. tank on a semitrailer with a gallon capacity of 7,500 gallons. In Wyoming 40 ft. and even 50 ft. semitrailers are used for hauling cattle. Another reason for the trend toward semitrailers is the slightly reduced tare weights of this type of combination for approximately equal pay loads.

Progress Towards Uniform Limitations

The American Assn. of State Highway Officials' policy code appears to be an approach to greater uniformity in weights and lengths, but the trucking industry is not happy with its effect on tandem axle vehicles and combinations. For example, a truck full-trailer, which operated in Washington and Oregon with a 71,250 lb. gross load calculated under a formula similar to the AASHO code. Subtracting 8,000 lb. for the front axle, we find that the remaining five axles can carry a total of

63,250 lb., or less than 13,000 lb. per axle, while the single axle allowance is 18,000 lb.

Professor John S. Worley, in his recent paper before the Pacific Logging Congress, summarized his attitude toward highways as follows:

"The modern pavement will support vehicles with an overall length of 60 ft. with as many as nine axles, each carrying a gross load of 18,000 lb. with no injury —bridges excepted.

"Bridges of 20 and possible 30 ft. spans have a strength to carry the above described loads without any real danger of failure. Bridges with spans of 100 ft. or more can carry 60 ft. combinations as here considered without danger of injury.

"Many miles of continuous highway have no, or but few, bridges with spans exceeding 30 ft.

"There should be a thorough examination of the bridges in all states to ascertain their exact carrying capacity, looking to a more effective use of our roads. Under present restrictions, the public is not enjoying the full use of its highways.

"A long range program should be adopted whereby all reconstructed or new bridges could carry vehicles with an overall length of at least 60 ft., having minimum gross loads of 152,000 lb."

Decisions Must Not Restrict Possible Payloads

In looking at these state limitations remember also that maximum weights are calculated by formulae based on axle spacing and are limited by arbitrarily fixed overall lengths. Because of the effect of fixed overall length limitations on formula calculated loads, please get rid of the fancy ornamental grills and bumpers that project considerably forward of the front tires. Highway trucks and tractors used in the West are definitely work horses, so make them trim and neat, but get rid of unnecessary and loose trim.

The sizes and loads now used in the western states are definitely practical almost anywhere in the country. From this realistic operating experience, for the next forward step in future line-haul commercial vehicle design, think of:

1. Combinations of 100,000 lb. or more gross weight.
2. Reduced tare weight per ton of freight.
3. Improved fuel economy per ton of freight carried.
4. Better grade and traffic performance.
5. Operations in extremes of weather. (Over half of the country has hot summers and cold winters.)
6. Operations in the mountains. (We have them in the East as well as in the West.)
7. Adequate steering and brakes for 50 to 55 m.p.h.
8. Less noise.
9. Longer periods between servicing and longer life between over hauls.
10. Maximum reliability of operation on long runs.

While this quick picture of western highway freight operation indicates that freight equipment designs and manufacture now are ahead of highway designs and construction, the problem is, *will we keep them ahead?*

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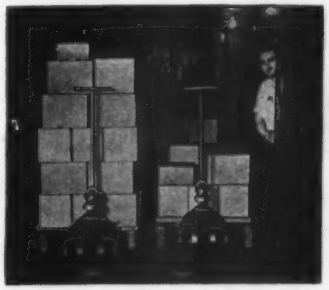

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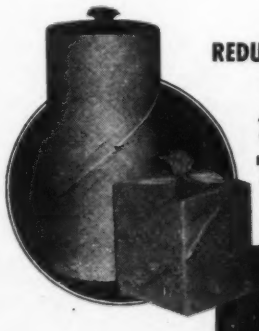

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AIR STANDARDS

(*Continued from Page 67*)

body with a president who is elected for a non-repetitive three year term. The council, which is in almost continuous session, carries out the actual work of the organization either at its own sessions or through various special committees which it sets up. The administrative body is the secretariat which functions in the manner of the UN secretariat.

ICAO is "concerned to bring about standardization of procedures and operating practices and of certain physical facilities for international air regulation. The translation of these standards into material and manufacturing specifications is a problem outside the scope of ICAO . . ." (Quoted from an address by L. Bedin of ICAO.)

The problem of developing specifications, as posed by Mr. Bedin, is also answered by him when he suggests the task be "undertaken by ISO." The International Organization for Standardization (ISO) is an association of national standards bodies organized a few years ago for the purpose of developing international standards for many fields of endeavor, including aviation. The United States representative at this standards body is the American Standards Assn. ISO is still in the formative stage and has as yet not developed standards for air transportation; however, the framework for an aviation standards section has been set up and steps are now being taken to form coordinating committees between ICAO and ISO. Similar committees will soon be functioning between ISO and the International Air Transportation Assn. (IATA).

In common with ISO and ICAO, IATA is a product of the spirit of world cooperation so evident during and immediately after World War II. It was founded in April, 1945 in Havana as a voluntary organization of airline companies in all those countries that are eligible for membership in ICAO. This world-wide trade association represents the airlines at ICAO meetings and supplements and aids the work of this UN group. The standards function of IATA are well summarized in a letter from the organization to the writer. The letter reads in part as follows: "The international standards and recommended practices promulgated by ICAO are formulated with IATA help in light of IATA recommendations. [IATA thus has] a hand in formulating the rules its members must obey. At the present time there are many standard regional procedures in use and the next year will see the adoption of many more. These include such items as codes for transmission of weather information and flight plans, maps and charts, aerodrome lighting, personnel licensing, air traffic control procedures, and a standard code of airworthiness.

"The international mechanical standards for such items as spare parts are still in the formative stages. It is planned that the IATA Technical Conference . . . will produce some very definite recommendations on these matters to be considered by ISO, which is the final authority on the mechanical standards, and by the ICAO, which is the final authority on procedures and airworthiness matters. The items [IATA] is particularly considering are the standardization of color coding or marking of tubing, supplies and systems, and compressed gas cylinders; a system for standardizing external couplings; a system for standardizing spare parts; and a system for the presentation of performance data."

IATA does not publish standards or specifications; instead, it functions in an advisory capacity in the development of ICAO and ISO standards. By this commendable show of self-restraint, it aids tremendously in preventing the far-too-common condition wherein everyone in a given field of endeavor issues conflicting and duplicating standards. In air transportation standardization on the international level, ISO will travel one path, ICAO another, and IATA will serve in an advisory capacity to both. The results to date have indicated clearly that

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U S-Canadian Shipments

INSTRUCTIONS issued by the Canadian Nationals Railways and the Grand Trunk Railway System under Circular 70 and Foreign Freight Dept. Circular No. 19, to the agents of these carriers provide that bills of lading of any type authorized for use in Canada covering shipments loaded on private sidings must be endorsed "Shippers load and count" by the agent of the carrier receiving the shipment for transportation. Shippers who wish to receive clear bills of lading without the endorsement "Shipper's load and count" to cover shipments loaded on private sidings must make application in writing to the agent of the originating carrier. The agents whereupon supply car seals and require the shipper to execute an agreement which is filed by the originating agent.

This agreement does not have legal effect of relieving the railway carrier investigating and dealing with any shortage in the shipments in the same way as in the case of shipments receipted for by the railways with the notation "Shipper's load and count." This agreement is used also in cases where shippers supply their own seals and wish to receive clear bills of lading. Application by shippers to the carrier for renewal of the supply of seals must be made at least ten days before the seals are required.

Consignees are required immediately to notify the local agent of the delivering carrier if discrepancy is discovered in unloading a car, whether the discrepancy is in the seal record or in connection with the freight in the car. If the shipments check correctly at the scene of transfer from the rail to the lake steamship carrier, where a clear bill of lading has been issued, the responsibility of the rail carrier ceases and the steamship carrier assumes responsibility if any shortage is discovered at destination. Package freight for export is checked by the railway carrier or its agent at the port of export at seaboard. If the freight is checked correctly and in full to the steamship carrier, the responsibility of the rail carrier is terminated. If shortage is noted when the goods are delivered at destination the matter is one for adjustment among the shipper, the steamship carrier and the insurance underwriter.

distribution not only in the United States but throughout the world will benefit tremendously.

At this relatively early date, standardization of airline tickets, documents and papers is a reality. The fantastic red tape entailed in carrying cargoes across national boundries is being cut ruthlessly. Only a short time ago, more than a thousand individual documents and papers were necessary to carry a piece of freight around the world. Gradually as the three organizations develop and mature, the number of documents will decline. Problems of different currencies in international trade have to a considerable degree disappeared with the functioning of the IATA clearing house. Standardization, with all its benefits to distribution, is becoming a true reality in international air transportation.

In a certain sense, standardization of international air transportation duplicates, on a global scale, the standards picture in this country. ICAO functions among nations of the world as the Civil Aeronautics Administration and the Civil Aeronautics Board do among the 48 states; IATA is the international counterpart of the Air Transport Assn. of America; ISO will, when it begins to function fully, do for world aviation what the Society of Automotive Engineers, the Aircraft Industries do for U. S. aviation.

As in international standardization, there is little duplication of standards work—each U. S. group functions within predetermined areas. For example, in the standardization of aircraft, the Society of Automotive Engineers through their AMS (Aeronautical Material Specifications) and AS (Aeronautical Standards) concentrates on engines, propellers, accessories, and airframes. Airframe hardware and standard parts, as well as power plant and accessory installations, are governed by the NAS (National Aircraft Standards) developed by the Aircraft Industries Assn., a group made up of manufacturers of aircraft an plane components. Electrical wiring and parts are standardized by the American Institute of Electrical Engineers and plane tires by the Tire and Rim Assn. This clear cut delineation of standards functions is a vital factor in keeping costs down and in lowering operating expenses—both of which operate to the benefit of distribution.

Although standard design for cargo planes and other air freight carriers might seem to be desirable from the immediate point of view of lowered plane costs and lowered freight charges, the consensus of opinion among engineers and manufacturers is that the relative youth of the aircraft industry is such that the restrictions imposed by such stindards would serve no long-term benefits and would, instead, impose unnecessary limitations on the inventiveness of designers. Standardization at the present—and probably in the forseeable future as well—is limited to replaceable and component parts. Yet, even here, changes and modifications are the rule rather than the exception. This is clearly demonstrated by the procedures followed by SAE in publishing their standards. For SAE automotive standards, the SAE Handbook, a hard-cover, bound volume, is used. Revisions and changes in the standards are made as new editions are brought out. The SAE Aeronautical Standards and Aeronautical Material Specifications are printed by SAE on single sheets and bound in a loose leaf folder to facilitate the substitution of revised and changed standards. The *status quo* in aircraft standards is indeed a fleeting one.

Because of this dynamism, loading and handling procedures as well as methods for packing, packaging, and marking of air cargo are as yet not standardized. The entire problem of how to prepare shipments for air transportation is so new that the background of trial and error and experimentation necessary for standardization is almost entirely lacking. Packaging experiences with rail or sea transportation cannot be applied to air transportation because the problems are so totally different. In many instances, the ideal packaging and packing material may be no packaging and no packing; instead the commodity is moved from plant to purchaser without any attempt at crating it or placing it in a package or other container. In many other instances, hitherto unheard-of packaging problems arise and must be solved by the use of new packing media and new handling methods. The Air Transport Assn. of America, representing airlines and air freight carriers, in speaking on packaging states: "The development of packaging for air transportation is in a flexible state. That is, the carriers follow no set or hard and fast rules. Rather, they prefer to leave the door open for constant improvement in this field. Their policy is summed up in a nutshell by the present air freight rules which normally are as simple as 'Shipments must be so prepared or packed to insure safe transportation with ordinary care in handling.'" A backlog of experiences and data on packaging has been compiled by this association in their "ABC's of Packaging for Air Cargo," in which are listed abridgements of all specialized air cargo packaging data developed to date. As similar data is collected and compiled, and as the need for standards becomes more acute, standards for packaging, packing, marking, loading, and handling will undoubtedly be forthcoming. For the present, the best sources of information on

(*Continued on Page* 121)

Will Business Improve in 1948?

Business volume during the latter months of 1948 will exceed the record peak established during the last half of 1947, according to the DEPARTMENT STORE ECONOMIST. Based on letters received from over 200 outstanding leaders of American business and industry, the ECONOMIST reports that 85 percent expect business to set new volume records. A principal reason justifying this prediction, as pointed out by business executives and reflected by the DEPARTMENT STORE ECONOMIST, is the high national income and full employment. Other significant factors include the European Recovery Program, Preparedness Program, and the additional buying power made available through income tax reductions.

"TRADE-INS"

(*Continued from Page* 28)

marginal operators and thereby become competitive with the equipment used by operators who were constantly modernizing their plants by the purchase of new equipment. This radical step was not accepted but it does have possibilities. Economists doubtless will eventually advocate an arrangement somewhat like that agreed upon by the automobile dealers who finally arrived at a definite book value on a car. Under the car dealer's plan, the value of a car depreciates annually, regardless of its actual condition. If, under this plan, a car has been damaged, its value is even less than the book value.

However, it will be some time before materials-handling equipment manufacturers, distributors and dealers recognize the need for drastic action, and until that time arrives, we will have a used equipment trade-in market in materials-handling equipment field.

Industrial users of used or rebuilt equipment will have to exercise great caution when purchasing second-hand units. The value of used gravity roller conveyors, gravity wheel conveyors, two-wheel hand trucks, and some small portable belt conveyors, can be appraised by inspection. In the case of large installations of belt conveyors, overhead chain conveyors, and production assembly units, such as ovens and assembly line conveyors, the buyer should be concerned over the conditions of sale. Frequently the cost of dismantling such units, transporting and reinstalling new locations is equal to the purchase price of entirely new installations. In addition there is the possibility of exceeding the purchase price of a new installation should certain unforeseen contingencies arise.

If equipment is purchased unassembled, engineering knowledge is required for proper installation at a new location. This knowledge is not always available except through the manufacturers' own engineering departments, and they do not have engineers to loan out for such service.

In the case of used units, such as cranes, shovels, tractors, fork lift trucks, etc., it is difficult to properly appraise value when they are in the dealer's yard or shop. Therefore, the safest way to purchase this type of equipment is to buy it from an authorized dealer or distributor who is well established. When purchases are so made the customer is assured of a fair deal and guarantees really mean something.

Manufacturers of handling equipment will not guarantee a rebuilt unit, but they expect their distributors and dealers to do so. This policy presents problems for even the most honest operators, because unseen wear and tear can cause havoc with a piece of equipment that has been completely overhauled. Weak spots frequently are overlooked during expert supervision. When failure occurs, an argument as to who is to blame is likely to ensue.

When a purchaser deals with an unauthorized distributor or dealer, his problem is increased. Some second-hand equipment dealers can be classed with the horse traders in the past. The purchaser buys at his own risk. Recently, for example, a purchaser bought a fork truck and after a period of sixty days, had trouble with the transmission. He obtained no service from the second-hand dealer who sold him this equipment, so he came to the authorized dealer of this particular make of truck.

When work was started it was found that the transmission case had been cracked and a very crude repair job of brazing had been done. Naturally tolerances are close on bearings and gears in a transmission case and it was only a matter of time until faulty alignment caused the transmission to fail. The result was a brand new transmission, adding to the cost of the equipment.

In another case, it was found that a number of universal joints in a machine had been covered with several coats of paint in order to take up wear and looseness. This trick did not show up for sixty days.

In another instance, after failure of a second-hand unit, it was found that parts had been taken from one machine and placed on another (commonly called "pirating.") The "pirated" parts resembled the right parts, but it was only a matter of time before difference in the tolerances caused mechanical trouble.

Frequently parts are not obtainable quickly. Then the second-hand dealer may endeavor to get a machine out of his shop for a ready sale by repairing used parts. He knows what eventually will happen, but he hopes the unit will hang together until the thirty or sixty day guarantee has elapsed. Most material handling equipment is so accurately machined that unless the second-hand dealer is equipped with a very fine machine shop he is neither capable of nor in a position to repair parts.

Since materials handling equipment is not standardized even the best mechanics can be fooled by appearances. So, also, can dealers and distributors. Therefore, it will readily be seen that the innocent purchaser who is not familiar with the equipment is entirely at the mercy of the seller. If all of these factors are taken into consideration, it will generally be found that the price difference between a rebuilt used machine and the purchase price of a new machine is so little that it hardly pays to buy second-hand equipment. It is better to buy the new unit, and enjoy its full life expectancy. Materials handling equipment effects such great savings that it generally pays for itself in a period of two years or less. Therefore, it pays to purchase the very best equipment possible. If second-hand equipment must be purchased, the buyer should be prepared to put up with the grief which goes with it.

AIRCARGO HANDLING

(*Continued from Page* 23)

the plane. Other experimental unit packages consisted of metal cages attached to a pallet base. It was found, from the test loadings conducted during the year, that a full hour of time could be saved on a transcontinental flight. It is believed that about 90 percent of all company cargo traffic could be palletized, and that such palletization was particularly adaptable to high value shipments.

However, other opinion is less optimistic as to the total volume of aircargo subject to palletizing. One airline official believes that the total palletized volume may not reach 50 percent. The difference in opinion as to how practical palletizing may become for aircargo shipping arises from the varied estimates of the proportions of commodities that will be air shipped. Another variable is the extent to which the shippers are willing or able to cooperate in a palletizing program. For example, the plan to gain cooperation from shippers in the preparation of "unit packages" had as yet not been fully formulated and that, to date, rules as to unit packages "were inconclusive." However, a number of shippers already have been approached as to the practical possibilities in palletized unit packaging.

Another unit package handling method under experimentation is the use of hampers on pallets. The hamper is a receptacle in which a considerable number of small packages could easily be assembled, for routing to a single unloading point. Such hampers would be so designed as to permit stacking, where double or triple stowage tiers were desired. It is believed that small-size packages and boxes are best suited to palletization.

The program by United Air Lines for increased use of pallets also is being supplemented by increased use of complementary cargo handling methods including the motorized fork lift.

One of the newest, and reportedly most useful of aircargo handling devices, is a motorized gasoline-powered loading belt which may be operated at a slight upward angle from a motor truck to the plane cargo stowage door. It is useful for the mechanical loading of miscellaneous varieties of cargo packages, none of which would be excessively heavy. The practical usefulness of this equipment was emphasized by results from a recent survey of cargo handling equipment and methods made at Chicago airport. The expert who made the survey recommended only a single change in the list of mechanical equipment then available for use. He recommended that Chicago airport be supplied with one additional motorized loading belt, even though Chicago already had two.

The endless rubber belt, which has a "crinkly" surface, is set on rollers for "up and down" operation. The conveyor is based on the bed of a mobile tractor, has a shelf and hand rails to prevent packages from falling off and permits a worker to walk on the belt to the loading or unloading points. The usual length of the elevating surface is about 15 ft. Another piece of equipment, closely associated, is a "down cargo chute." Small items of freight may be slid down by gravity from plane stowage. By use of such means, it was found that cargoliners needed less scheduled "ground time" for "off or on" cargo handling than did the big passenger planes using the same airport.

SITUATION WANTED

Warehouse Executive—eighteen years experience cold storage and general merchandise; presently employed as general manager, interested in relocating. Address

Box A101 c/o DISTRIBUTION AGE,
100 East 42nd St., New York 17, N. Y.

Books and Catalogs

BORROWING ON INVENTORY TO FINANCE YOUR BUSINESS, 31-p. booklet discussing general business financing with emphasis on inventory financing, explains how an inventory can practically be made to finance itself through warehouse receipts, and how the business executive can find out how to use his inventory as collateral for working capital loans from his regular bank or other lending agency—without moving the goods from his premises. Lawrence Warehouse Co., 37 Drumm St., San Frncisco 11, Calif.

BYERS ¾ YARD MODEL 83, 16-p., two-color catalog which describes up-to-date specifications and technical data and illustrates possible job applications of the Byers Model "83", ¾ yard excavator. Byers Machine Co., Ravenna, Ohio.

BOTTLE LABELING ADHESIVES, 6-p. illustrated, two color technical service bulletin on application and label selection data for packaging purposes. A complete range of all bottle label adhesive bases is discussed, selection and handling of paper labels, and recommendations for the proper adjustment of adhesives for all machine application. Paisley Products, Inc., 1770 Canalport Ave., Chicago 16, Ill.

Publication of three new catalog editions is announced by Fruehauf Trailer Co., The west coast edition is a 40-page booklet describing the line of trailers most used in that region while the Canadian issue covers 36 pages dealing with the models used in that area. A special 8-page catalog reprinted in French is offered for the French-speaking Quebec trade. Fruehauf Trailer Co., Detroit 32, Mich.

MULTIPLE-CIRCUIT BATTERY CHARGERS, new bulletin (B.222) for those interested in material handling. Electric Products Co., 1725 Clarkstone Road, Cleveland 12, Ohio.

MERCHANDISE FACTS, new revised edition, paper bound booklet designed to give sales personnel and consumers the basic facts about merchandise and are specifically aimed toward the sales training programs of department stores. Research Bureau for Retail Training of the University of Pittsburgh.

ROADSIDE REPORT, 16-p. booklet on the results of a nationwide check on the performance of Ford trucks. Ford Motor Co., Dearborn, Mich.

DIRECTORY listing 104 federal government purchasing offices has been prepared for Chicago companies interested in government contracts. The list is classified according to the armed services and other federal purchasing agencies, with names and addresses of personnel to be addressed. It also lists five publications which the government has prepared for the guidance of vendors. Chicago Assn. of Commerce and Industry.

MODERN TIME AND COST SAVERS, Bulletin 62, illustrating ten types of standardized conveyor units especially designed for warehouses, food industries, bottlers, canners and packers, mills, and seed distributors. Standard Conveyor Co., North St. Paul, Minn.

Getting down to *Cases*

By LEO T. PARKER
Legal Consultant

WAREHOUSING

Things You Can Do

YOU CAN win a suit filed by the owner of missing stored goods if you convince the jury that the owner or his employes withdrew the goods from your warehouse, or that the owner had access to the goods. In Moe v. American Ice & Cold Storage Company, 190 Pac. (2d) 755, Washington, testimony showed that the Everett Fish Company received from a warehouse company seven negotiable warehouse receipts for 128,045 pounds of stored fish. Later, the warehouse company could not deliver several thousand pounds of fish on presentation of the warehouse receipts, and was sued for the value of the fish. During the trial, testimony was given that the Everett Fish Company and its employes withdrew fish from the warehouse from time to time. In fact, employes of the fish company testified that no one representing the American Ice and Cold Storage Company was around at certain times when fish were withdrawn from storage. In view of this testimony the higher court refused to hold the warehouse company liable for value of the fish. By comparison, it was shown in Scott v. Russ, 46 S. E. (2d) 152, South Carolina, that a woman deposited valuable merchandise for storage. Later a man presented the receipts and stated he was the husband of the woman who deposited them. The goods were delivered to him. The woman sued the bailee for conversion and proved that she had not authorized her husband nor any other person to take delivery of the goods. The lower court held that the woman was entitled to recover $1,500, the *estimated* value of the goods. The higher court reversed the verdict, stating that to get a valid verdict the woman must prove the *actual* value of the converted goods.

Things You Can't Do

YOU CAN'T sell warehouse receipts of a deceased person without confirmation or approval of a court. Also, the highest responsible bidder at an executors' sale of warehouse receipts of a decedent's estate has the right to appeal from a court order rejecting his bid. In Bowdry v. Stitzel-Weller Distillery, 192 Pac. (2d) 279, Oklahoma, an executor accepted an offer of $7,605 for warehouse receipts of a deceased. Soon afterward one Bowdry, submitted a bid of $8,500.00 for the property. The executor refused to consider such bid, stating he had perfected a sale. After several appeals the higher court finally held that Bowdry's highest bid must be accepted.

MARKETING

Things You Can Do

YOU CAN recover possession of merchandise not fully paid for by a conditional buyer, if the conditional contract was properly recorded. For example, in Guerin v. Kirst, 192 Pac. (2d) 120, California, the testimony showed that a man named Grove purchased merchandise from a dealer named Guerin. Under a recorded conditional contract, the purchaser made a down payment and agreed to pay the balance monthly. Soon afterward Grove, who had not fully paid for the merchandise, sold it to one Kirst. Guerin found the merchandise in the custody of Kirst who refused to give up possession to Guerin because he had paid Grove without knowing that the latter had not paid the agreed contract price. Guerin sued Kirst for possession of the merchandise, plus $9,075 rental. The higher court held in favor of Guerin. By comparison, you can avoid liability on a verbal guarantee if the written sale contract contains a clause disclaiming verbal guarantees. See Boro, 164 Fed. (2d) 777.

Things You Can't Do

YOU CAN'T recover damages based on a seller's guarantee of secondhand equipment unless you prove that he gave a *positive* guarantee. In Lent v. McIntosh, 186 Pac. (2d) 626, Washington, it was disclosed that a purchaser bought a used diesel caterpillar tractor with bulldozer and accessories for $6,000. The contract of sale contained this clause: "Purchaser agrees that he has examined the property here described and is using his own judgment as to its condition, fitness and value, that the seller makes no representation, statement, warranty or guaranty as to its condition, or with reference to said property; that the execution of this contract is not procured by any statement, representation or agreement not herein contained, and that each and every condition and agreement relative to the subject matter of this contract is contained herein." After the purchaser had the tractor a few days he discovered that the engine had cracks in the cylinder walls and otherwise the tractor was in very poor mechanical condition. The purchaser sued the seller for damages and alleged that the seller *verbally* represented that the machine was in operating condition and that certain cracks in the drive case were surface scratches only and did not in any manner affect the operating efficiency of the tractor. Nevertheless the higher court refused to hold the seller liable, saying: "When a seller and a buyer deliberately enter into a contract wherein the seller positively and expressly refuses to give any warranty, and the contract is not induced by fraud, no warranty of any kind can be implied by law." By comparison, In Tyler Furnace Company v. Thomas, 7878 N. E. (2d) 80, Ohio, it was shown that a buyer signed a contract with a seller for delivery of merchandise within five days for $225. The seller did not deliver the merchandise within 5 days and the purchaser refused to accept delivery. The seller then sued the purchaser for $225, and presented as evidence to the court a properly signed note for this amount. During the trial the purchaser testified that his signature on the alleged note was genuine, but he never intended to sign a note. He further testified that the seller's salesman had held a sheaf of papers in his hand and procured his signature by representing that the papers were required by government regulations. The higher court held that the purchaser need *not* pay the note, first, because the seller had breached its contract to deliver the merchandise within 5 days; and second, the note was signed through misrepresentation.

PACKAGING

Things You Can Do

YOU CAN make any reasonable use of a municipal sewer or drainage ditch. In Amite City v. Southern Company, 34 S. (2d) 60, Louisiana, it was shown that a plant maintained a one hundred foot well from which water was used to cool a condenser, after which it was allowed to drain into a drainage ditch owned by the city. The city asked the court for an injunction prohibiting the company from draining water into the ditch because it stimulated vegetative growth which stopped the flow of water therein. The higher court refused to grant the injunction, saying: "To require only one or two taxpayers to assist in cleaning and maintenance of city drainage ditch, maintained by city for common use of all its citizens and property owners, would be unreasonable.

Things You Can't Do

YOU CAN'T make payments of com-

missions, brokerages, or other compensation to buyers of merchandise. If you do you violate the Robinson-Patman Act. In Rathke v. Yakima Valley Grape Growers Ass'n, 192 Pac. (2d) 349, Washington, a purchase contract was signed by the purchaser and seller. The contract provided that the broker may act as a broker, and also as a purchaser for fifty per cent of the manufactured products. The higher court held all contracts relating to the transaction unenforceable and said: "We are also of the opinion that the Robinson-Patman Act, 15 U.S.C.A. 13(c), absolutely prohibits the paying, or granting, or receiving, or accepting anything of value as a commission, brokerage, or other compensation, or any allowance or discount in lieu thereof, from seller to buyer."

TRANSPORTATION

Things You Can Do

YOU CAN get a permit to serve the public although another carrier is efficiently serving the same territory. In Lang Transp. Corporation v. United States, 75 Fed. Supp. 915, the Federal Court held that an increase in competition is not a good reason for denying a certificate of public convenience and necessity to a carrier new in the territory.

YOU CAN avoid obtaining a permit from the Interstate Commerce Commission to operate motor trucks used solely during a *single day* to haul agricultural products. In Interstate Commerce Commission v. Dunn, 166 Fed. (2d) 116, it was shown that certain motor vehicles were used to transport agricultural commodities. The higher court held that the owner of the vehicles need not obtain a certificate of public convenience and necessity or other authority from the Interstate Commerce Commission if nothing else was hauled on the interstate trips, and the trucks were not used on the same day for other hauling. By comparison, you can refuse payment of compensation to an employe injured by a fellow employe if you operate *both* interstate and intrastate. This is so because a common carrier engaged in both interstate and intrastate commerce is subject to the Interstate Commerce Act. In Price v. Railway Exp. Agency, Inc., 78 N. E. (2d) 13, Massachusetts, it was shown that a common carrier was engaged in both interstate and intrastate commerce. An employe named Price was injured when struck by a motor truck negligently operated by a fellow employe of the carrier. The higher court refused to award compensation to Price.

Things You Can't Do

YOU CAN'T avoid paying damages for perishable merchandise injured in transit due to employe negligence. In Agency, Inc. v. A. J. Tebbe & Sons Company, 209 S. W. (2d) 197, Texas, the higher court held a carrier liable for $600 damages to the owner of spoiled radishes. Nor can you refuse to pay minimum wages specified by the Fair Labor Standards Act if your employes build, construct or transport merchandise in interstate commerce for the United States government.

FINANCE and INSURANCE

Things You Can Do

YOU CAN avoid paying the full value of goods stolen from storage if the owner insured the goods. In Schoen v. Wallace, 78 N. E. (2d) 801, Illinois, it was shown that the owner of a fur coat worth $3,500 insured it for its full value and then stored it with a $100 valuation. The coat was stolen and the bailee, as warehouseman, paid the owner $100. Also, the insurance company paid the owner $3,500. The latter sued the bailee for $3,500, but the higher court held the bailee liable for only $100. By comparison, for example, in Cement, Sand & Gravel Company v. Agricultural Insurance Company, 30 N. W. (2d) 341, Minnesota, it was shown that a company had an insurance policy which insured its "main building and conveyers, passageways and superstructures and all other fixtures belonging to and forming part of building and all machinery within 100 feet of the building". The insurance company refused to pay a fire loss of equipment which was more than 100 feet from a building but within 100 feet of merchandise stored outside the building. However, the higher court ordered the insurance company to pay the loss saying that the policy impliedly covered an area within 100 feet from the merchandise.

Things You Can't Do

YOU CAN'T collect on a theft insurance policy if your employe intentionally or untentionally delivers goods to a thief. In Starlight Fabrics, Inc. v. Glens Falls Ins. Company, 79 N. E. (2d) 812, New York, a truckman called at a warehouse for goods. An employe in good faith delivered this goods to the truckman and in fact helped him load the truck. Later it was discovered that the truckman was a thief and had no authority from the owner to take delivery of the goods. In subsequent litigation the higher court held an insurance company not required to pay the loss on an insurance policy insuring goods while in the custody of a "messenger" or in "due course of transit." By comparison, you cannot avoid or reduce Federal income by a family arrangement. Hence one who transfers income to a member of his family to be received in the future, or income from interest on corporate bonds, or dividends on corporate stock cannot avoid paying income tax thereon, although the family member paid the tax. In Gouldman v. Commissioner of Internal Revenue, 165 Fed. (2d) 686, it was shown that 40 shares of the Indian Creek stock were transferred on the books of the company from a stockholder to his son and the son paid to his father $4,000 for this stock which he borrowed from a bank. Later, the Indian Creek Company declared a 100 per cent dividend and issued a check for $4,000 to the son; and subsequently declared a 50 per cent dividend, sending a check for $2,000 to him. Although the son paid Federal income tax on the dividends received from the company, the higher court ordered Gouldman the father to pay income tax on these dividends plus penalty.

Lost Mileage

NATIONAL and state action to halt diversion of highway user taxes to other than highway uses is being strongly urged by the National Highway Users Conference, comprising more than 1,000 national, state and local groups. The nation has lost 95,313 miles of roads from diversion in the last 13 years, reports Albert Bradley, chairman of the conference, and executive vice president, General Motors Corp.

The table below shows the state highway mileage lost through diversion from 1934 through 1946. It was computed by dividing the amount diverted by the average cost of constructing a mile of highway in the year of the diversion. The data is from PRA tables.

The conference urges that state legislatures pass laws requiring highway taxes to be spent for highway purposes only. This, it maintains, would stop the dangerous trends toward toll roads. It also requests Congress to strengthen the existing federal penalty against diversion.

State	Mileage Lost
Alabama	1,147
Arizona	28
Arkansas	42
California	2,654
Colorado	429
Connecticut	3
Delaware	381
Florida	5,573
Georgia	4,604
Idaho	—
Illinois	1,769
Indiana	858
Iowa	—
Kansas	—
Kentucky	1,662
Louisana	3,565
Maine	15
Maryland	124
Massachusetts	509
Michigan	46
Minnesota	153
Mississippi	15
Missouri	46
Montana	12
Nebraska	1,665
Nevada	—
New Hampshire	—
New Jersey	697
New Mexico	688
New York	7,677
North Carolina	3,907
North Dakota	779
Ohio	14,653
Oklahoma	3,703
Oregon	39
Pennsylvania	5,786
Rhode Island	292
South Carolina	226
South Dakota	1,922
Tennessee	3,476
Texas	12,702
Utah	196
Vermont	7
Virginia	16
Washington	612
West Virginia	—
Wisconsin	12,635
Wyoming	—
TOTAL	95,313

People in Distribution

For our readers' convenience, items referring to one person only are arranged alphabetically according to the individuals' names. Company news or changes affecting more than one individual are arranged alphabetically by company names. Association items are similarly arranged.

Fred F. Alford, Alford Refrigerated Warehouses, Dallas, has been named a member of the Pacer Committee of the National Assn. of Refrigerated Warehouses.

H. Randolph Barbee, secretary of the Federal Storage Co., has been named president of the District of Columbia Control of the Controllers of America.

James Boyd, formerly eastern district manager of the Westinghouse Electric Corp., has been appointed general sales manager of the Lima-Hamilton Corporation's Hamilton Div.

R. O. Cocke, who rose from passenger agent to vice president of the Trans World Airline has been elected to membership in the Board of Directors.

J. W. Devenne has been appointed vice president and general manager of Western Express Co. with headquarters in Cleveland. The firm operates a large scale interstate trucking service throughout the industrial area between Toledo and Boston. (Kline)

Nelson G. Fry, recently aviation consultant and operations analyst of the Atomic Energy Commission, has left his post to join Capital Airlines in Washington, D. C. as assistant to the director of traffic and sales. The new executive was employed by United Air Lines for eleven years in many capacities.

George Griffiths, general traffic manager of the American Home Products Corp., 22 East 40th St., New York, N. Y., has been promoted to the position of Director of Traffic.

Edward J. Lynch, formerly manager of office methods and planning, has been appointed as manager of warehouse service, a new department created by Sylvania Electric Products, Inc. (Vitkauskas)

Donald M. Macomber of the C&A Terminal Co. has acquired the capital stock of the Union Storage Co. in Dayton. Macomber entered the storage business in Chicago in 1912 and at various times was connected with the Railway Terminal & Warehouse Co., the West Side Warehouse Co., the Ontario Warehouse Co., the Chicago Bonded Warehouse Co., and the Warsaw Storage Co. Macomber will continue the operation of The Union Storage Co. with W. E. Seeley as manager.

J. D. Malcolmson, technical advisor of the Robert Gair Co., Inc., New York, has been appointed as director and vice president of the American Management Association in charge of AMA's packaging division. Malcolmson will also serve as chairman of the packaging division planning council.

Joseph P. Novak has been named a packaging engineer at the Raynolds Metals Co. in Louisville. His time will be devoted to the designing of packaging for the various products manufactured by this company. He brings 23 years of experience to his new post.

E. A. Parrish, Hampden Transfer & Storage Co., Baltimore, has been appointed advertising manager of North American Van Lines, Inc. by action of the Board of Directors at Fort Wayne.

Harry F. Pratt, former general manager of Warehousing Associates in Chicago, has been appointed as manager of the Milwaukee warehousing operations of the National Terminals Corp. Mr. Pratt is a former member of the executive committee of The American Warehousemen's Assn., (Merchandise Div.) and served for many years as chairman of AWA's committee on cost accounting and rate procedures.

Philip D. Reed, chairman of the board of the General Electric Co. has been elected chairman of the research and policy committee of the committee for economic development.

Richard W. Shanklin, former sales manager of the wholesale division of the White Motor Co., has been named New England regional manager in Boston.

Arthur M. Tesnow has been appointed general manager of the Erie Warehouse Co. and the Erie Trucking Co.

Walter S. Vance has become associated with Zimmer Boat & Trailer Co. of Detroit, and with National Trailer Co. of Indiana. He will be assistant to **Gerald R. Murphy,** director of sales and advertising. (Vitkauskas)

W. M. Watkins, formerly wholesale manager for Mack Trucks, Dallas branch, has been appointed as district manager of the Indianapolis Branch.

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Avco Manufacturing Corp., Crosley Div., has announced the appointment of **F. H. Lukas** and **J. R. Carter** to the public relations staff. **R. W. Duncan** has been promoted to the position of works manager.

Canadian National Railways has announced the appointment of **Charles R. Murry,** former general freight agent, as assistant freight traffic manager. Other senior appointments are: **Charles L. McCoy** as general freight agent; **George Douglas,** assistant general freight agent; **Andrew Sutherland,** assistant foreign freight agent; **Charles H. Garneys,** assistant chief of tariff bureau for the central and Atlantic regions.

Chicago & Southern Air Lines has announced the resignation of **Carleton Putnam** as president with **Sidney A. Stewart** as his successor. Mr. Putnam will continue as chairman of the board and voting trustee of the company. Mr. Stewart has been the company's vice president for two years.

Fruehauf Trailer Co. has announced changes within the sales dept. **E. A. Watson** has been assigned to the national sales div. and **D. B. Walter** will fill his vacancy as sales manager. **James F. Duncan** was transferred to head the new factory branch in Louisville, and **Victor Gross** has been promoted to Dayton branch manager. **Vance Howe** is now national accounts manager at Detroit and **Roger Sullivan** has been made Columbus manager. **John L. Crooks** has been named manager of the Erie branch.

General Plywood Corp. has announced the following changes in their organization: **Edwin O. Dulaney** has resigned as president and director due to ill health. **Calvin H. Hilton** has resigned as vice president. **John F. Farris** has been elected vice president; **James W. Thomas,** treasurer; and **Ford M. Hettich,** secretary. Four new members who have joined the company are; **Carl B. Robbins** as president and director; **Jesse H. Lide** as vice president in charge of sales and advertising; **Irving W. Clark** as general sales manager; and **Marion W. Lewis, Jr.,** director.

The George Haiss Manufacturing Co., Inc. has announced the appointment of **J. F. Day** as their sales representative for the northwestern section of New York and Pennsylvania. **H. D. Williams** has been appointed as representative of eastern Pennsylvania and southern New Jersey; and **J. Benatar** has been appointed as representative in the five boroughs of New York City.

Minneapolis-Honeywell Regulator Co. and its industrial division, Brown Instrument Co., have announced a series of personnel changes. They are: **George D. Maves,** manager of the Boston branch; **Edwin A. Thompson,** manager of the Denver branch; **Robert H. Jacobs,** manager of the Peoria branch.

National Airlines has announced the promotions of **E. G. Baringer** to superintendent of passenger service; **W. F. Bevins** to superintendent of stations; **O. M. Foxworth, Jr.,** as manager of express and mail; and **D. O. Kerkow** as cargo manager.

Port of Los Angeles has announced two new appointments. **T. G. Maddox,** one of the most widely known rail and steamship executives in the country, has been named traffic manager. **Francis E. Mieding,**

former rate expert with the Union Pacific Railroad has been appointed to the post of traffic rate analyst.

Railway Express Agency has announced the election of **Rudolph G. Rydin,** vice president of the Atchison, Topeka, and Santa Fe Railway Co., as a new director. **Maynard M. Frank** has been appointed general superintendent of transportation of the western dept.

Other recent changes include the retirement of **Charles C. Evans,** their general attorney after thirty years of service. **John H. Mooers** has been appointed vice president and general counsel to succeed the late **H. S. Marx. J. V. Lione, J. A. Dill,** and **P. W. Wilson** have been appointed general attorneys in the agency's law department.

A. E. Stanley Manufacturing Co. has promoted **W. R. Boyer,** former assistant treasurer to a new post as comptroller. Former comptroller, **R. C. Scherer,** continues as secretary, director and member of the executive committee, and **E. E. Rhodes** was promoted to assistant treasurer.

Sherwin-Williams Co. announces appointment of **Allan K. Penttila,** formerly of the traffic dept. in Cleveland, as traffic manager in charge of all transportation matters involving raw materials as well as finished goods on the West Coast.

Union Pacific Railroad has appointed **Arthur E. Stoddard** as vice president to succeed the late **W. H. Guild. H. E. Shumway,** former assistant to the president, will succeed Stoddard as general manager of the eastern district, and **L. J. Bachman,** assistant to the vice president has been promoted to secretary and assistant to the president. Other recent changes include the promotion of **Madison H. Fowler,** formerly traffic manager for Detroit, to the newly created post of assistant freight traffic manager with headquarters in Omaha, Neb., and the promotion of **Carl J. Stegeman** as traffic manager in Detroit.

United States Rubber Co. has announced the appointment of **A. N. Guy** as manager of the tire division.

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Association of American Railroads has announced the retirement of **L. M. Ross,** former district manager, after 47 years of railroad service. **E. P. Miller,** formerly chief clerk of the car service division, will be his successor. Mr. Miller will also serve as field secretary of the New England Shippers Advisory Board.

Columbus Van Owners Assn. has elected **Warner S. Young,** vice president and sales manager of the Atlas Transfer & Storage Co., as president of the association. Others elected were: **Clarence Jacobs,** president and manager of Jacobs & Son, Inc., transfer and storage vice president; and **Robert D. Williams,** assistant manager of the Boston Storage & Van Co., secretary-treasurer. (Kline).

Controllers Institute of America has announced the election of **Wilbur R. Anderson,** controller of the Bekins Van and Storage Co., and **Earl P. Harvey,** vice president of Midland Warehouses, Inc., to membership within their organization.

DISTRIBUTION BRIEFS

The Clark Equipment Co. has added several new units to the chain of independently owned and operated Authorized Clark Industrial Truck Parts and Service Stations to provide faster and more competent service to users of Clark fork lift trucks. These stations are located at Baltimore, Brooklyn, Malden, Boston, Chicago, Indianapolis, Los Angeles, Memphis, Minneapolis, New York, Norfolk, Oakland, Philadelphia, St. Louis, Seattle, and West Allis, Milwaukee.

Crooks Terminal Warehouses, Inc. are celebrating the 35th anniversary of their founding in Chicago and the 25th anniversary of Kansas City activity. Today the company has five warehouses in Chicago and three in Kansas City and is associated with **Overland Terminal Warehouse** in Los Angeles.

The Customs Brokers and Forwarders of America, Inc., has released the names of thirteen firms in seven cities which have been approved for membership in their organization. These are: **Bartz Forwarding Co., T. J. Hanson Beaumont,** and **T. F. Shaw,** all of Texas; **Bolton and Mitchell, Inc., Murray Hill Co., Inc., Sellers Transportation Co., Inc.,** and **J. S. Stass Co.,** all of New York; **A. G. Wichterich and Co.,** and **W. R. Zanes and Co. of La., Inc.,** and **Pan-American Shipping Co.,** all of New Orleans; **Berry and McCarthy,** and **Shepston & Sciaroni,** both of San Francisco; and **Albert F. Maurer Co.** of Philadelphia.

The Fifnir Bearing Co. of New Britain, Conn., has finished construction of a new warehouse and office located at 245 Piedmont Ave., Atlanta, Ga. Branch manager A. G. Laughridge predicted the enlarged facilities will result in better services to the entire southeastern section.

International Harvester Co. will construct a new wholesale distributing service parts depot on property located in St. Paul adjoining the present Harvester building on University Ave. The cost of the new building will be more than a million dollars. This expansion is being made in order to offer faster and more complete service to Harvester customers using motor trucks, refrigeration, farm and industrial power equipment.

Leader Towing Service, Akron, has requested the Interstate Commerce Commission for a unique "truck retrieving" license to haul disabled vehicles into Akron, Canton, or Cleveland from an eight state area. The vehicles would be towed to the home base for repair, instead of having to rely on outside garages near the scene of the breakdown.

The Newark Distributing Terminal, Inc. sold the fireproof bakery and warehouse occupied by the **A & P Tea Co.** in Newark to Frank Brisco in one of the largest deals of its kinds reported recently.

Ohio Equipment Co., Inc. of Cleveland has announced further sales and service expansion of their company. A new office has just been opened in Mansfield, Ohio to better serve users of material handling equipment in both sales and service in that area.

Peace & Elliman, Inc. have leased for a long period, Peter Doelger, Inc., the seven-story warehouse at 421 East Fifty-fifth St. to the A & A Packing Co., Inc. which is engaged in domestic and export packing and trucking and is currently executing government contracts.

Port of New York Authority has announced the opening of a new Port Authority Trade Promotion Office in Cleveland to serve export shippers of the Ohio-Michigan-Western Pennsylvania area, and help to route Midwestern commerce through the Port of New York.

Rapids-Standard Co., Inc., materials handling equipment manufacturers of Grand Rapids, Mich. has announced the adoption of the term "RapiStan" as a trademark to designate all equipment manufactured in their line. The new trademark emphasizes the initials which stand for the combination name of the company.

Roy Roberson-Stanley Albert and Central Leasing Co. of Chicago will handle the transportation of Lustrow prefabricated houses.

COMING EVENTS

Oct. 19-24—Second Annual Kansas Manufacturer's Show, Wichita, Kansas.

Oct. 25-26—Twentieth Annual Boston Conference on Distribution at Hotel Statler, Boston, Mass.

Nov. 4-5—Annual National Time and Motion Clinic, sponsored by the research division of the Industrial Management Society at the Sheraton Hotel, 515 N. Michigan Ave., Chicago, Ill.

Nov. 18-21—Metropolitan Dodge Dealers Truck and Equipment Show. Madison Square Garden, New York City.

Jan. 1-14, 1949—Annual Engineering Display, Society of Automotive Engineers, Book-Cadillac Hotel, Detroit, Mich.

Jan. 3-8—Annual Convention National Furniture Warehousemen's Assn., Palm Beach Biltmore Hotel, Palm Beach, Fla.

Jan. 7-10—58th Annual Convention, American Warehousemen's Assn., Fairmount Hotel, San Francisco. (Joint meeting of both divisions; National Assn. of Refrigerated Warehouses and AWA Merchandise Div.)

Jan. 10-14—National Materials Handling Exposition, Convention Hall, Philadelphia, Penna.

Feb. 6-7, 1949—15th Annual Meeting of Associated Warehouses, Inc. to be held in San Francisco at the Hotel Mark Hopkins.

March 1-6—National Frozen Food Exposition, 71st Infantry Armory, 34th and Park Ave., New York City.

BERLIN AIR LIFT

(*Continued from Page* 21)

To clearly visualize what happened from a transportation standpoint, let us imagine the locale to be shifted to the U. S. A. Let us suppose that several leading domestic airlines were informed that there were some 200 rail cars, each averaging 40,000 lbs., tied up in rail yards in Richmond, Norfolk and Hampton Roads, Va. They were further told that these rail cars were loaded with food commodities, coal, oil, and medical supplies destined for New York City and that the very existence of some 2.3 million people depended upon these supplies. They were then told that because all rail, trucking and water facilities between Virginia and New York were closed, the contents of these 200 rail cars (four long trains of fifty cars each) would have to be reshipped to New York by air.

This in itself would be a stupendous assignment—but it would be only the beginning. The airlines would be further told that the entire contents of 200 cars would have to be flown in a single day, as the following day there would be 200 additional rail cars to be emptied and contents flown to New York, and the next day even more, and so on every day without letup for Sunday or bad weather. And to further complicate matters, the air officials would have to confine the flights to three air traffic lanes leading to New York.

This is the story of the Berlin airlift, only 80 days after its inception. For the distance from Frankfurt, the railhead in the U. S. Zone, to Berlin is approximately the same as from Richmond to New York. The number of rail cars used in the example is, of course, arbitrary as commodities vary in weight. Moreover, since European rail cars are somewhat smaller than domestic cars, it would be safe to estimate nearer 300 rail cars of freight which had to be unloaded, trucked to planes, flown to Berlin, discharged into trucks and moved to destination. This would be equivalent to transporting the entire contents of a medium-sized ocean vessel every second day.

Technically, the requirements and necessity of moving such a fabulous amount of airfreight daily have given rise to refinements and developments which point to even greater movements by air in the future. Two-engined Douglas C-47s, carrying about three tons of cargo each, were soon supplemented by a growing fleet of four-engined C-54s, capable of carrying eight to ten tons each. The army is now accepting delivery of C-74 Globemasters, each of which could carry 25 tons on a single flight.

Other technical improvements resulting in greater tonnage were new emergency runways, erected with wartime speed and efficiency; use of flying boats on Berlin's lakes (especially by the British) to supplement the airfields; and experiments by our own airforce in dropping cargo.

Maximum landings and departures from the present three Berlin fields in the American and British zones, and the increased use of flying boats, and the not-yet employed dropping of freight such as coal could double the August 4,000 ton daily delivery.

These shipments cover all needed food and medical supplies, as well as fuel and coal for essential purposes. During the winter months another 3,000 to 3,500 tons per day would be needed to give every family about 100 lb. of coal per week. Any capacity beyond 7,500 tons would permit the allocation of space to textiles, paper and other materials needed for light and heavy manufacturing.

The record written at Berlin contrasts with the movement of goods across the Atlantic during the recent war which never reached more than several hundred tons a day under the most favorable weather conditions. Here, of course, carrying capacity of each plane was limited due to huge gasoline loads.

What of the cost? Would a similar operation be practical, except where the prestige of the Western powers was involved? It must be kept in mind that as the movement of freight by air progresses from a hurriedly devised operation to a mass airlift equaling a ship's cargo every other day, the cost curve dropped with increased speed. Latest Government figures, in which costs were computed from air lift source to final delivery (not counting freight to Frankfurt) include all transportation costs to and from both airport ends, cost and maintenance of all personnel plus their dependents, estimated cost of fuel, plane servicing and replacing of engines, parts, etc. At the time our share of the Berlin airlift was reaching 5,000,000 pounds daily, the complete bill to the American taxpayer was reported to be $260,000 per day. This means that a pound of freight was flown 270 miles, plus pick-up and delivery at destination for a fraction over 5¢. Or to put it differently, at this rate a parcel weighing almost twenty pounds could be picked up at Richmond, Va., flown to New York and delivered to consignee for $1. It should be kept in mind that we are flying this freight with trucking services at both ends at the rate of 38¢ per ton mile.

Assuming an indefinite continuance of such an operation, costs resulting in the first eighty days of an emergency situation abroad would surely be trimmed and reduced as the pattern became standardized. Naturally, the Berlin airlift experience does not forecast a drastic shift in freight transportation in the near future. But it does indicate an increased role for airfreight and intensified integration of all media of transportation.

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This special advertising section of public warehousing has been consolidated for ready reference and maximum utility. It includes merchandise, refrigerated, household goods and field warehouses. For shippers' convenience, states, cities and firms have been arranged alphabetically.

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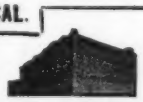

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The "whys" and "wherefores" of The American Society of Traffic and Transportation will be discussed by Dr. G. Lloyd Wilson, prominent transportation authority in the November issue of DISTRIBUTION AGE.

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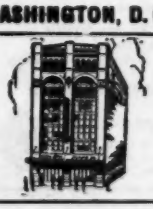

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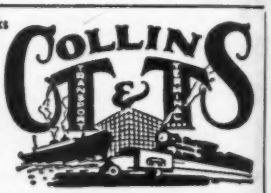

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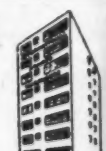

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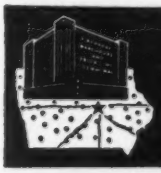

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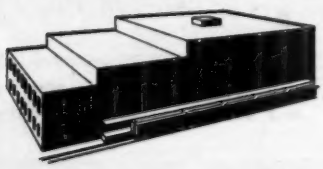

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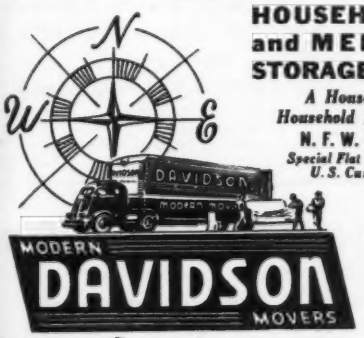

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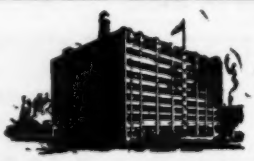

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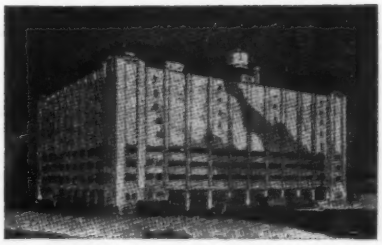

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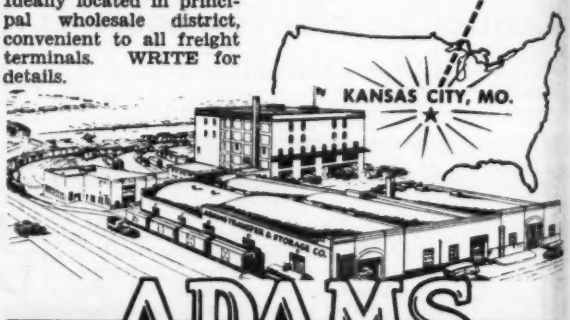

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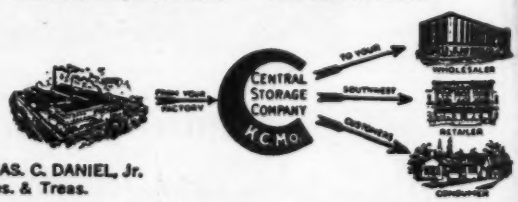

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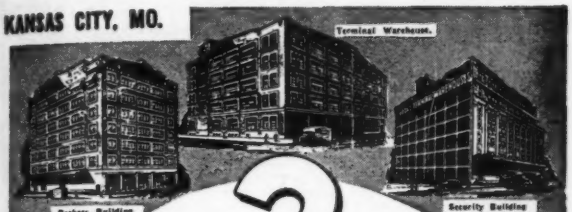

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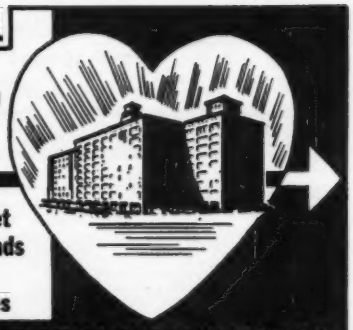

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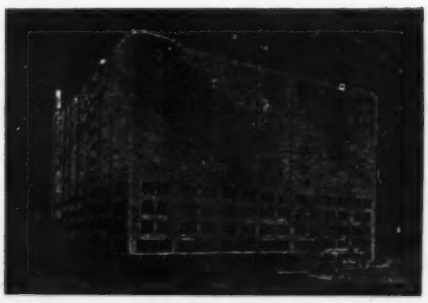

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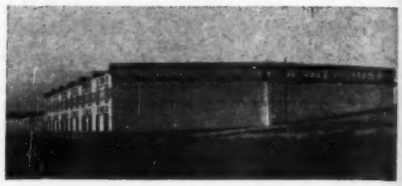

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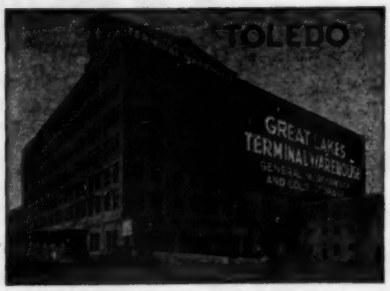

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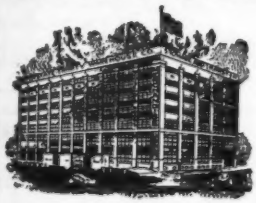

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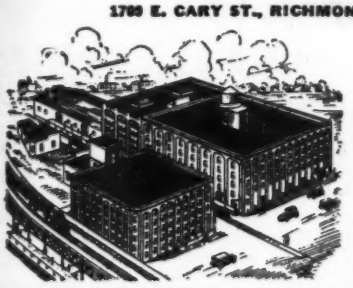

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TRAINING FOREMEN

(*Continued from Page* 40)

localities to use "nicknames," which leads to general company confusion in the purchase of equipment, preparation of work manuals, and the issuance work orders.

In Session V, there is discussion of "The Foreman's Part In Materials Handling." This includes these suggested topics: 1. Making present methods more efficient. 2. Foreman may desire major changes. 3. Getting methods changed. 4. Duties after methods are changed. 5. Continued search for new, better methods.

For Session VI, the topic is "Results of Efforts in Some Plants." This includes definite examples of new efficiencies from use of pallets; loading of small parts on pallets; installation of overhead conveyors; improvements in export packing; stacking pallets to reduce warehouse costs; saving of space by use of pallets; improved storage methods; and safety from improved handling.

For Session VII, the instructor will submit to the class a "Sample Problem" in layout and materials handling, which concerns the travel of a heavy sprocket through a plant. And in Session VIII, there will be "Discussion of Problem," during which class members will submit their suggested handling solutions.

Session IX normally is devoted to "Summary and Testing." The instructor is provided with an optional list of 24 course review questions which may be used in a written class examination. Or the instructor may devise questions of his own, to conform more closely to the local plant situation.

BETTER BATTERIES FOR INDUSTRY THROUGH RESEARCH, 16-p., illus. booklet, treating such subjects as: the analysis and control of battery metals through the use of the ultraviolet spectrograph and densitometer; instantaneous voltage and current characteristics as studied by cathoderay oscillograph; X-ray diffraction methods of studying battery chemicals and the changes therein which occur in battery life; studies of crystalline structure through the metallograph and binocular microscope; physical testing of battery structural materials, etc. James A. Gilruth, Gould Storage Battery Corp., Trenton 7, N. J.

AIR STANDARDS

(*Continued from Page* 83)

packaging for air transportation are the various paper companies and others concerned with the manufacture of packages and packaging materials.

The Air Transport Assn. of America through its various committees does develop standards for its members who are scheduled airlines operating within the United States and in international trade. Standards for weather information, airport development, air traffic control, safety regulations, airport lighting and communications are the task of the operations section of ATAA. The engineering section deals with standard design recommendations for aircraft, aircraft equipment, and ground handling equipment.

Federal interest in standardization of aviation stems from the Civil Aeronautics Act of 1938 which charges the government to "promote safety of flight in air commerce by prescribing and revising from time to time such minimum standards governing the design, materials, workmanship, construction, and performance of aircraft, aircraft engines, and propellers as may be required in the interest of safety." The act then proceeds to list six other specific categories in which standardization is to be undertaken. These include: standards for appliances; standards for inspection, servicing and overhaul of aircraft; standards for spare parts and deplacement parts; standards for hours of work for airmen and other employes of air carriers; standards on "rules of the road," and standards in other phases of aviation which have a bearing on safety in air commerce.

The exercise of the powers vested in government by this act is split between two agencies, the CAB, an independent agency responsible only to the President, and the Civil Aeronautics Administration, an agency of the Commerce Department. CAB operates as the legislative and judicial branches of "aviation's government." The civil air regulations issued by CAB constitute its legislative functions and the enforcement of these laws its judicial function. CAB also acts as judge in passing on applications of airlines for routes and rates. In addition, the board is responsible for promulgating all air traffic rules, for fixing minimum standards for the operation of all classes of air carriers, and for adopting all other rules and standards necessary to the maintenance of safety in air commerce.

The Civil Aeronautics Administration serves as the executive branch of "aviation's government," enforcing CAB rules, coordinating the building of airways, carrying out research on aviation, and aiding in the development of aviation in this country.

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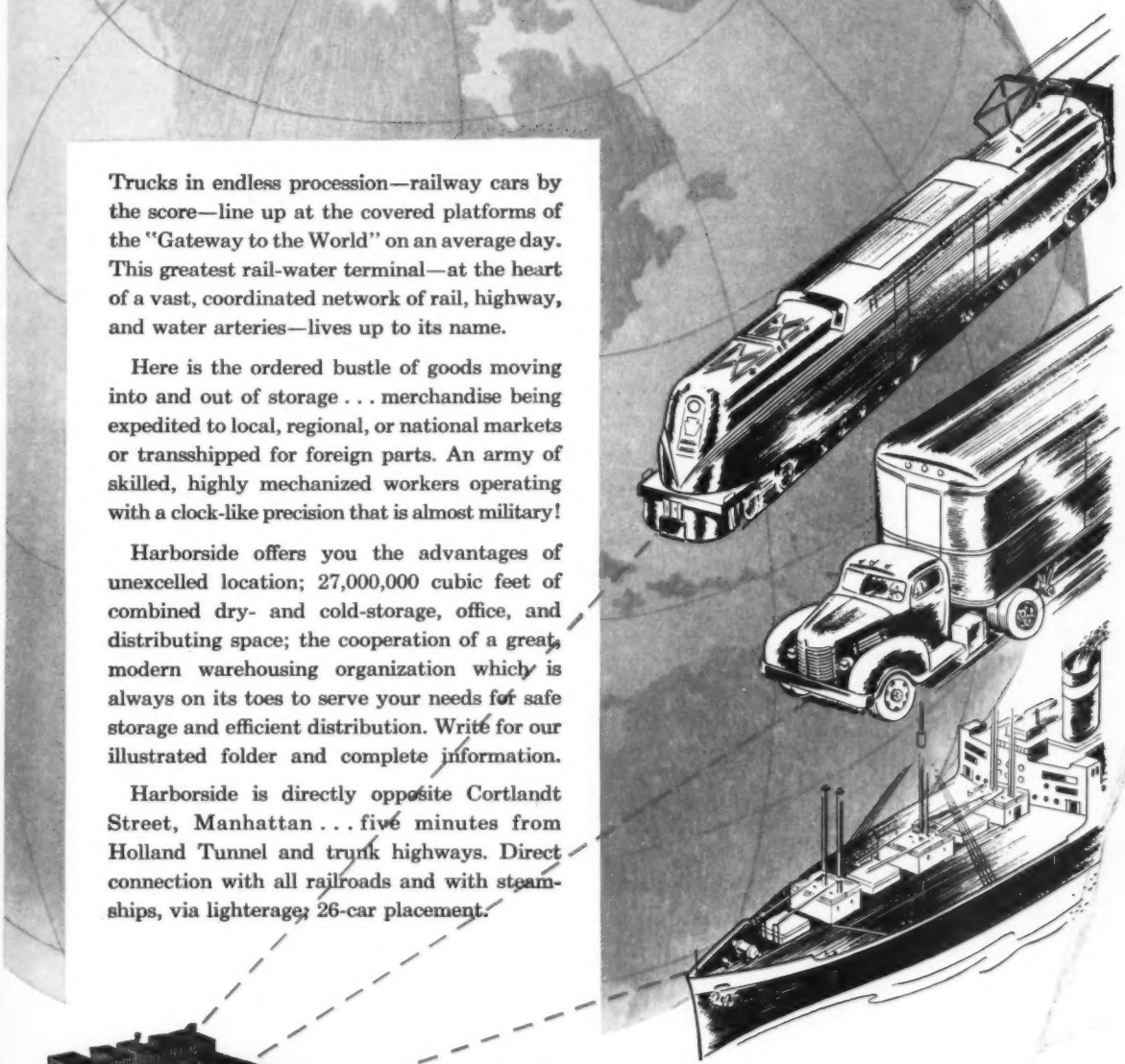

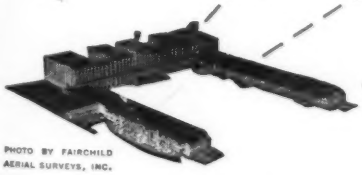

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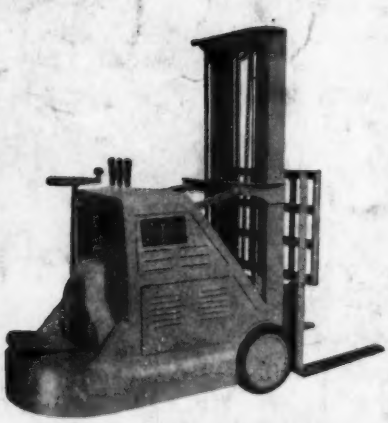

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